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APR 6 1936

Vol. XXV, No. 3 MARCH, 1936

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

TRADE MARK

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THE 84th ANNUAL MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION WILL BE HELD IN DALLAS, TEXAS, AUGUST 24–29, 1936. Hotel Adolphus, Headquarters.

Local Secretary, Walter D. Adams, Forney, Texas.

The 1936 Meetings of the American Association of Colleges of Pharmacy, the National Association of Boards of Pharmacy, Conference of Pharmaceutical Association Secretaries, of the Pharmaceutical Law Enforcement Officials and the Plant Science Seminar will also be held in Dallas, Texas.

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IN THE

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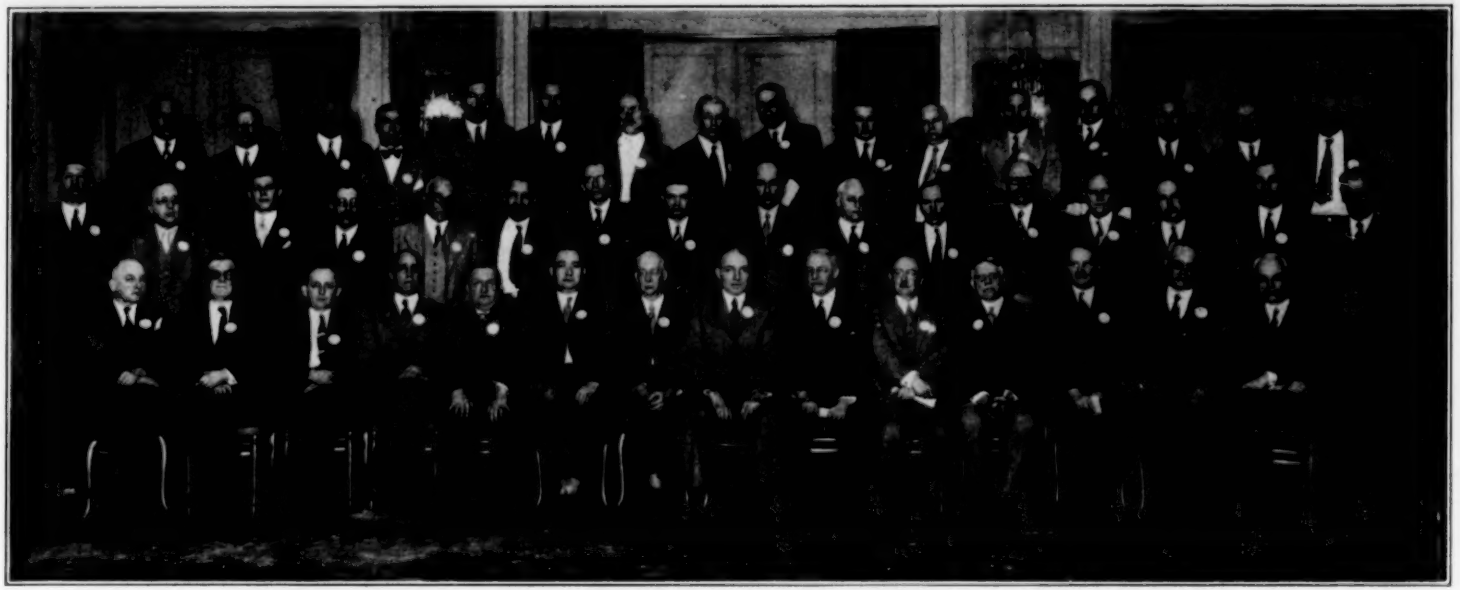

Members of the Committee of Revision of the U. S. Pharmacopœia XI.

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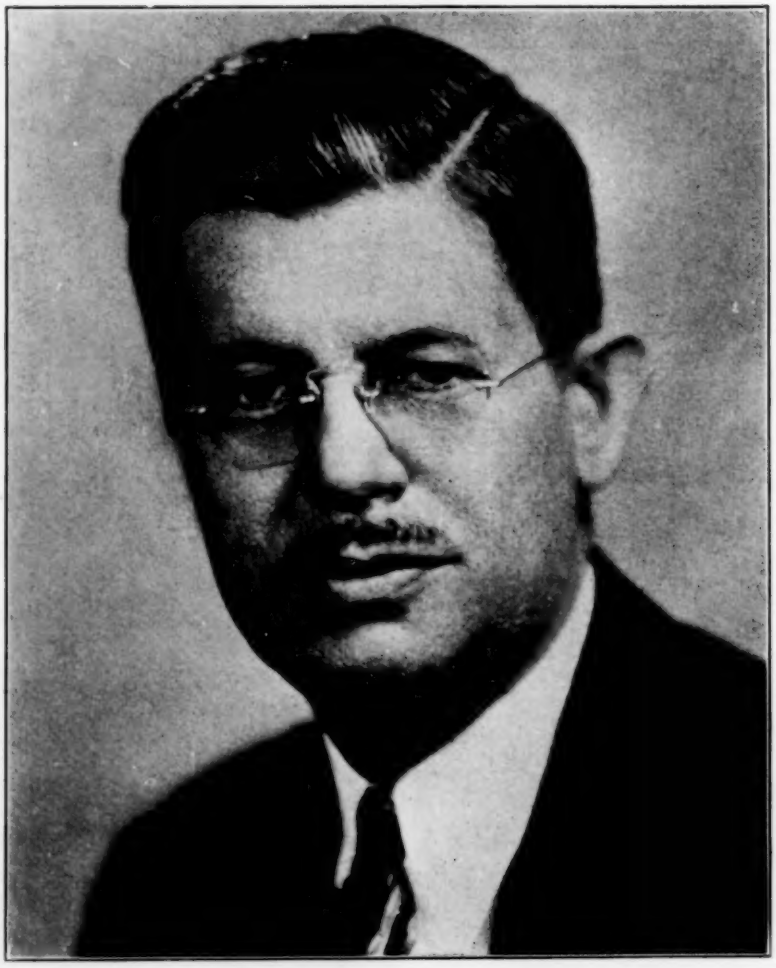

FRANK A. DELGADO, VICE-PRESIDENT, A. PH. A.

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

VOL. XXV MARCH, 1936 No. 3

FRANK A. DELGADO.

Frank Anthony Delgado, *First Vice-President* of the AMERICAN PHARMACEUTICAL ASSOCIATION, was born in Jacksonville, Florida. He came from a family of pharmacists, both his father and two uncles having followed that profession. One of the latter, Dr. Thomas W. Perrin, of Augusta, Ga., was a partner of Dr. Robert Land who for years was a member of the Georgia State Board of Pharmacy. F. A. Delgado's father obtained his early experience in the establishment of the other uncle, Robert Martinez. After becoming registered, he opened his own drug store in the suburb of Riverside, Jacksonville, Fla., in the 1890's. This was about the time of the Spanish American War and Mr. Delgado, the subject of this sketch, recalls quite vividly that Jacksonville was full of American soldiers on their way to Cuba, and while, later on, he was to play a part in a military conflict of importance, he never again experienced thrills much greater than witnessing General Fitzhugh Lee's troops parade on the streets of Jacksonville. It was in his father's store, beginning about 1901 or 1902, that F. A. Delgado served his early apprenticeship and he looks back and recalls with pleasure this period of about 35 years ago when pharmacy and pharmacists were held in rather high esteem in the community. At that time there were no chain stores in Jacksonville nor did the department stores stock many toiletries, much less medicines; many drug stores had not installed soda fountains; the term "curb service" was unknown, although ladies, in victorias and carriages, did sometimes drive up in front of the store to make purchases.

After graduating from High School, Mr. Delgado attended the Morris School of Pharmacy in Macon, Georgia, graduating in 1911. Shortly after graduation he passed the Georgia State Board of Pharmacy and returned to Florida, where he was employed with the J. Daniel Boone Drug Company until 1913, when he went into business for himself. In 1914, he sold his store and after a few months of leisure, decided, early in 1915, to again engage in the drug business, and opened his second drug store. He continued the successful operation of this business until 1918, when he enlisted in the Naval Service of the United States, reporting for duty to the United States Naval Hospital at Charleston, South Carolina, having in the meantime sold his store to his head clerk.

After undergoing a course of training at Charleston he was among ten making the highest mark in their examination, and was ordered to report to the Brooklyn Navy Yard for foreign service. Here his career nearly ended, as he was among the thousands who contracted influenza. However, he recovered and was drafted for service on the U. S. S. Leviathan. Mr. Delgado had many experiences while serving on the Leviathan and was afforded an opportunity of seeing bits of France and England during the many trips, back and forth, of the Leviathan. In April 1919 he secured an honorable discharge from the U. S. Navy and returned to Jacksonville, but had been there only a month or two when the wanderlust overtook him and he enlisted in the American Red Cross with the rank of Lieutenant and embarked for Siberia by way of Japan. He spent two months in Japan and shortly after his arrival in Siberia, was made Assistant Director of Civilian Relief. His principal duties, while in Siberia, consisted of aiding in the care of from 800 to 1000 Russian orphans and other children. Leaving Siberia in 1920 on a Japanese freighter he sailed three-fourths the way around the world with an expedition, the purpose of which was to return these children to their point of origin, Leningrad, Russia. A book could be written regarding the experiences that befell those who participated in this voyage. The return of the children to their destination was only accomplished after many hardships, trials and tribulations on the part of those who participated in the project. Winter quarters had to be established in Finland, where Mr. Delgado was placed in charge of medical, hospital and all other supplies. Leaving Finland in the Spring of 1921, he reported to headquarters at Paris and took advantage of accrued leave to visit Spain, the land of his father's ancestors. His trip was interrupted in Spain by orders to report to Prague, Czechoslovakia, to take charge of medical supplies and supervise their distribution to child welfare stations scattered throughout the Republic. The year following found him in Riga, Latvia, where he was now Director of medical warehouses and supplies in Latvia for the American Relief Administration, an activity headed by former President Herbert Hoover. It will be recalled that at the time Russia was being devastated by a famine. At the conclusion of his services with the American Relief Administration he reported to London on his way to the United States and there met and married, October 1922, Miss Olive F. Sanders, of London, formerly of Connecticut.

He returned to the United States late in 1922 and after visiting his mother in Jacksonville, decided, early in 1923, to engage in the drug business in Miami, Florida. Mr. Delgado received an offer for his business in 1925 and he and Mrs. Delgado once again set sail for Europe on an extended tour of several months, and while in Europe visited some ten or more countries. They returned to Miami late in 1925 only to find that Miami was in a state of depression due to the collapse of the real estate boom. Mr. Delgado had planned to engage in the real estate business. Needless to say this plan was abandoned and after experiencing the full force and fury of the hurricane of 1926, he decided to seek his fortunes elsewhere. About this time the A. R. A. Association, an organization of former over-sea wartime relief division was meeting in Washington, D. C. The Delgados attended the meeting, and while in Washington he formed his present connection and became a member of the Chemical Division of the Bureau of Foreign and Domestic Commerce of the United States Department of Commerce.

Early in 1931 he was assigned to the Merchandising Research Division to serve

as drug and chemical consultant for The National Drug Store Survey and to be in charge of the Prescription Phase of the Survey.

Mr. Delgado is the author of numerous articles and papers concerning various phases of the drug industry, both foreign and domestic. He is a joint author of "The Professional Pharmacy" (1933), a first edition of 10,000 copies of which met with such demand that a second edition was required, and "Prescription Department Sales Analysis in Selected Drug Stores" 1932, an outgrowth of the National Drug Store Survey.

As technical adviser for the pharmacy exhibit he served the Century of Progress Exposition at Chicago. At present he is assistant secretary of the U. S. Pharmacopœial Convention (elected in 1930 for a 10-year term).

Mr. and Mrs. Delgado have one son, Frank Anthony, Jr., born September 13, 1927.

ANNUAL MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION FOR 1936.*

Arrangements have been completed for the meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION and affiliated organizations in Dallas, Texas, during the week of August 24th to 29th. At this time, the Texas Centennial Exposition will be in full operation. Those attending the meeting will have the opportunity of visiting an interesting section of the country and of seeing an exposition which celebrates one of the most important and romantic events in the history of the nation. Complete information about the Exposition will be available later.

Walter D. Adams will serve as *Local Secretary* for the meeting and Sam P. Harben as *Chairman of the Committee on Arrangements*. These gentlemen have had long experience in arranging for meetings of the Texas Pharmaceutical Association. They and their associates are organizing the various committees necessary for the work, are perfecting the arrangements for the business sessions and for the entertainment of the delegates and visitors during their stay in Dallas.

The Hotel Adolphus, the largest in Dallas, has been selected as the Headquarters for the meeting. It is located at Commerce and Akard Streets, near the business section of the city, and has 825 rooms, all with bath. The rates are $2.50 and up, single; $3.50 and up, double; $4.00 and up, twin beds; and the charges for meals are equally reasonable. Several large hotels are located near the Hotel Adolphus and the Dallas Chamber of Commerce has pledged that accommodations will be available for all who may come. However, those planning to attend are urged to *make reservations promptly.*

Very favorable transportation rates will be available on account of the Exposition and many interesting and inexpensive side-trips can be arranged by conferring with transportation officials. Because of the heavy travel expected at the time of the meeting, transportation arrangements should be made as promptly as possible.

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* A. PH. A. Bulletin No. 7, March 16, 1936.

THE EXHIBIT OF LIFE AT TEXAS CENTENNIAL.

Plans for an exhibit at the Texas Central Centennial Exposition to be held this year in Dallas, to be known as "The Exhibit of Life," were outlined at a conference of representatives of educational institutions of the state in Dallas, December 15th. Dr. Edward H. Cary, Dallas, was chairman of the conference. The exhibit will cover the development of all the sciences useful in the propagation and care of human life. The Texas State Medical Association will probably prepare as its share an exhibit of the medical history of Texas and participation of the medical profession of the state in the development of the practice of medicine.—*The Journal of the A. M. A.*, February 1, 1936.

EDITORIAL

E. G. EBERLE, EDITOR 2215 Constitution Ave., WASHINGTON, D. C.

SOCIAL IDEALS IN LEGISLATION.

A VIEW of law that needs to be more generally understood is the adjustment of the frame-work of society, more and more, so as to permit liberty of individual action and yet exerts its force to draw up individuals to lofty ideals of common and social action. In this building-up of social ideals, in being permissive and creative, law will continue to develop in the minds of men a social consciousness that each is a living and vital part of the social whole, with duties as well as rights.

The growth—in both the demand and frequency of human coöperation in making life worth living and for the advancement of civilization—is dependent on the necessity and action of the individual, when planning a work to promote his comfort and success, to consider the effect it will have on the welfare of his neighbor, whether it imperils life, health, happiness or prosperity. Grave responsibility rests upon us in our daily activities, whether in business or elsewhere, and this responsibility cannot be evaded or disclaimed.

These comments were prompted by discussions in recent hearings on Fair Trade legislation.

EBERT PRIZE AWARDS.

1874–1935.

ALBERT E. EBERT was president of the AMERICAN PHARMACEUTICAL ASSOCIATION 1872–1873. On September 12, 1873 he submitted a letter wherein the Ebert award was outlined. The following have earned the award and the titles of papers are given.

1874, **Charles Mitchell** (Philadelphia, Pa.), "On Active Principles of the Official Veratrums."
1877, **Frederick Power** (Washington, D. C.), "On the Resin of the Rhizome of Podophyllum Peltatum, L."
1882, **J. U. Lloyd** (Cincinnati, O.), "Precipitates in Fluid Extracts."
1886, **Emlen Painter** (San Francisco, Calif.), "Spirit of Nitrous Ether."
1887, **Edward Kremers** (Madison, Wis.), "Volatile Oils Hedeoma Pulegioides and Andropogon Nardus."
1888, **Joseph Geisler** (New York), "Notes on the Morphiometric Assay of Opium."
1890, **Wm. T. Wenzell** (San Francisco, Calif.), "Coloring Principles of Flowers."
1891, **J. U. Lloyd** (Cincinnati, O.), "A Scheme of Assaying."
1896, **James W. T. Knox** and **Albert B. Prescott** (Ann Arbor, Mich.), "The Caffeine Compounds of Kola."
1897, **Virgil Coblentz** (New York), "Gelsemic Acid."
1898, **Henry Kraemer** (Philadelphia, Pa.), "Quantitative Examination of Crude Drugs."
1899, **Edward Kremers** and **Oswald Schreiner** (Madison, Wis.), "Nitroso Derivatives of Caryophylline and Cadinene and the Bearing on the Characterization and Classification of the Sesquiterpenes."
1902, **J. O. Schlotterbeck** and **H. C. Watkins** (Ann Arbor, Mich.), "Contribution to the Chemistry of Stylophorum Diphyllum."
1903, **Frederick B. Power** (Washington, D. C.), "The Chemistry of the Stem of Derris Uliginosa."
1905, **Dr. Ernest Schmidt** (University of Marburg, Germany), "Concerning Choline, Neurine and Allied Compounds."

1906, **J. O. Schlotterbeck** and **H. C. Watkins** (Ann Arbor, Mich.), "Contribution to the Chemistry of Chelidone."

1907, **Frederick B. Power** and **Frank Tutin** (Washington, D. C.), "A Chemical Examination of Eriodictyon."

1908, **A. B. Stevens** and **L. E. Warren** (Ann Arbor, Mich.), "Poison Sumach."

1909, **Henry Kraemer** (Philadelphia, Pa.), "Some of the Distinguishing Morphological Characters of Belladonna and Scopolia."

1910, **Harry M. Gordin** (Chicago, Ill.), "The Crystalline Alkaloid of Calycanthus Glaucus."

1911, **W. A. Puckner** and **L. E. Warren** (Chicago, Ill.), "The Composition of Strychnine Arsenate and the Composition of Commercial Copper Citrate."

1915, **E. N. Gathercoal** (Chicago, Ill.), "The Pharmacognosy of the Medicinal Rhamnus Barks."

1916, **J. U. Lloyd** (Cincinnati, Ohio), "Adsorption Powers of Hydrated Siliceous Earths."

1919, **Arno Viehoever, C. O. Ewing** and **J. F. Clevenger** (Washington, D. C.), "Some Commercial Viburnum Barks and Preparations."

1920, **George D. Beal** (Chicago, Ill.), "Immiscible Solvents in Connection with Their Use in Alkaloidal Assaying."

1921, **Albert Schneider** (Lincoln, Nebraska), "Micro-Analytical Methods."

1922, **W. L. Scoville** (Detroit, Mich.), "Hot Extraction of Drugs."

1923, **Paul S. Pittenger** (Philadelphia, Pa.), "The Biological Standardization of Local Anesthetics;" "Isolated Uterus Assay for Pituitary Extract."

1924, **H. V. Arny** (New York, N. Y.), "Standardized Color Fluids."

1925, **H. W. Youngken** (Boston, Mass.), "The Anatomy and Botanical Position of Miré."

1926, **J. A. Handy** and **L. F. Hoyt** (Buffalo, N. Y.), "Diethylphthalate."

1927, **L. W. Rowe** (Detroit, Mich.), "Colorimetric Assay of Digitalis."

1928, **E. E. Swanson** (Indianapolis, Ind.), "Standardization of Digitalis Preparations, Nux Vomica, Gelsemium and Veratrum. Hydrogen-Ion Concentration Factor."

1929, **John C. Krantz, Jr.** (Baltimore, Md.), "The Buffer Capacities of Acacia and Tragacanth."

1930, **M. R. Thompson** (Baltimore, Md.), "The Pharmacology of Ergot."

1931, **H. W. Youngken** (Boston, Mass.), "The Pharmacognosy and Pharmacology of Viburnum."

1932, **Zdenek F. Klan** (Praha, Czechoslovakia), "Influence of Period of Vegetation and Development of Plants on the Alkaloidal Content of Hyoscyamus Niger, L."

1933, **Ewin Gillis and H. A. Langenhan** (Seattle, Wash.), "A Phytochemical Study of Hydrastis Canadensis."

1935, **Marvin J. Andrews** (Baltimore, Md.), "Determination of the Reasonable Permissible Margin of Error in Dispensing."

LIST OF RESEARCH PROJECTS CONNECTED WITH THE REVISION OF THE NATIONAL FORMULARY (1931–1935).

PUBLISHED IN THE JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

THE FOLLOWING titles of published papers speak for the contributory services of the authors in the revision of the National Formulary. They are published as evidence of valued services and appreciation and as a reference for those who seek the information.

W. B. Baker—"Suggested Assays for Some N. F. Preparations," January 1933, page 25.

J. C. Bauer—"Suggested Assays for Some N. F. Preparations," March 1932, page 244.

Geo. D. Beal, J. Rosin and C. R. Szalkowski—"Carbo Activatus," August 1935, page 630.

W. P. Briggs—"A Phytochemical and Pharmacological Study of Mitchella Repens Linné, N. F. V," March 1931, page 224.

F. S. Bukey and M. Brew—"The Value of Tolu Coating, U. S. P. X and N. F. V," April 1935, page 291.

A. H. Clark and E. Kirch—"Potassium Guaiacol Sulphonate," July 1935, page 564.

J. F. Clevenger—"Preliminary Investigation of Certain Physical and Chemical Properties of the Volatile Oils from Authentic Plant Products," January 1932, page 30.

W. G. Crockett, W. M. Frayser and G. V. Thompson—"The Behavior of Ethyl Nitrite in Copaiba Emulsions," November 1932, page 1153.

H. G. DeKay and C. O. Lee—"A Study of the Change in p_H of the Official Elixir Ferric Pyrophosphate, Quinine and Strychnine, N. F. V," April 1933, page 316.

Dr. Bernard Fantus and C. M. Snow—"Syrup of Potassium Guaiacolsulphonate," May 1931, page 473.

Dr. Bernard Fantus, H. A. Dyniewicz and J. M. Dyniewicz—"A Study of Vehicles for Medicines:"

"1. The Eriodictyon Preparations," April 1933, page 323.
"2. Aromatic Elixirs," July 1933, page 655.
"3. Iso-Alcoholic Elixirs," August 1933, page 751.
"4. Elixir of Phenobarbital," February 1934, page 127.
"5. Elixir of Amidopyrine," February 1934, page 129.
"6. Compound Elixir of Chloral and Bromide," March 1934, page 232.
"7. Syrup of Cinnamon," July 1934, page 699.
"8. Aromatic Syrup of Acacia," August 1934, page 812.
"9. The Glycyrrhiza Vehicles," September 1934, page 915.
"10. Fruit Syrups," January 1935, page 46.

E. N. Gathercoal—"Report of the Committee on Unofficial Standards," February 1930, page 191; April 1931, page 385.

E. N. Gathercoal—"Report on Extent of Use of N. F. V Galenicals," February 1931, page 166.

E. N. Gathercoal—"The U. S. P.-N. F. Prescription Ingredient Survey of 1931," March 1932, page 277.

E. N. Gathercoal—"Use of Fluidextracts during the Past Fifty Years," February 1932, page 159; March 1932, page 274.

E. N. Gathercoal, R. S. Adamson and R. K. Snyder—"The Tests for Redistilled Water in the National Formulary VI Monograph," September 1935, page 800.

S. W. Goldstein—"Suggested Assays for Some N. F. Preparations," February 1932, page 128.

D. C. Grove and E. M. Hoshall—"Assay Methods for Some N. F. VI Preparations Containing Bromides," June 1933, page 545.

W. J. Husa and A. P. McLean—"History of the Calcium Lactophosphate Preparations," January 1935, page 58.

W. J. Husa and Louis Magid—"Drug Extraction. I. A Study of Various Menstrua from the Standpoint of Swelling Effects, Penetration and Extraction," September 1934, page 891; October 1934, page 980; November 1934, page 1097.

W. J. Husa and C. L. Huyck—"Drug Extraction. II. The Effect of Fineness of Powder and of Variation in Solvents on the Percolation of Belladonna Root," June 1935, page 446.

W. J. Husa and S. B. Yates—"Drug Extraction. III. The Function of Preliminary Maceration in Relation to the Percolation of Belladonna Root," July 1935, page 538.

W. J. Husa and Paul Fehder—"Drug Extraction. IV. The Effect of Variation in Solvents on the Extraction of Jalap," August 1935, page 615.

W. J. Husa and Louis Magid—"Drug Extraction. V. The Extraction of Belladonna Root with Glycerinic Menstrua," October 1935, page 839.

Glenn L. Jenkins and E. M. Hoshall—"The Assay of Preparations Containing Pepsin Official in the National Formulary," July 1933, page 625.

Glenn L. Jenkins, E. M. Hoshall and D. C. Grove—"The Assay of Caffeine Sodio-Salicylate and Elixir of Sodium Salicylate," February 1934, page 118.

Glenn L. Jenkins and S. Millett—"The Assay of National Formulary Preparations Containing Bismuth," July 1935, page 561.

Glenn L. Jenkins and M. F. W. Dunker—"Assay for Phenol in Official Preparations," October 1935, page 840.

E. A. Kelly and E. V. Lynn—"Chemical Study of Senecio Aureus," August 1931, page 755.

H. A. Langenhan and E. Gillis—"A Phytochemical Study of Hydrastis Canadensis (Goldenseal)," March 1931, page 210; April 1931, page 329.

H. A. Langenhan and E. Guth—"Studies in Extraction as Applied to N. F. Preparations," August 1931, page 746.

H. A. Langenhan and R. A. Cain—"Liquor Calcis Sulphuratæ," April 1934, page 344.

C. H. LaWall and J. W. E. Harrisson—"Chondrus Bleached with Sulphur Dioxide," November 1932, page 1146.
C. H. LaWall and J. W. E. Harrisson—"The Arsenic Content of Chondrus," April 1934, page 308.
D. L. Macht and H. M. Cook—"A Pharmacological Note on Cimicifuga," April 1932, page 324.
A. O. Mattheus—"The Effect of Storage of Distilled Water in Glass Ampuls on the Alkalinity and Total Solids Content," August 1931, page 767.
S. W. Morrison—"Amaranth as a Substitute for Cudbear with Improved Methods in the Preparation of Some N. F. Galenicals," November 1933, page 1112.
J. C. Munch, G. E. Byers and W. F. Reindollar—"Proposed U. S. P. XI and N. F. VI Standards for Anthelmintics," November 1932, page 1158.
J. C. Munch and W. J. Stoneback—"Comparative Pharmacognostic and Pharmacological Studies on Apocynum Cannabinum and Apocynum Androsæmifolium," November 1932, page 1158.
W. L. Scoville and L. W. Rose—"Tincture and Fluidextract of Digitalis," February 1932, page 160.
E. V. Shulman—"Suggested Assay for Spirit of Formic Acid," February 1932, page 130.
E. V. Shulman—"Suggested Assay for Anisated Spirit of Ammonia," February 1932, page 131.
L. E. Warren—"Resin of Ipomea," March 1932, page 217.
E. H. Wirth, L. E. Martin and P. G. Soderdahl—"Studies on Cudbear," November 1935, page 949.
H. W. Youngken—"The Pharmacognosy, Chemistry and Pharmacology of Viburnum:"
"I. Introduction. History, Botany and Pharmacognosy of Viburnum Prunifolium L., Viburnum Rufidulum Raf., Viburnum Cassinoides L. and Viburnum Nudum L.," July 1930, page 680.
"II. History, Botany and Pharmacognosy of Viburnum Lentago Linné," April 1931, page 315.
"III. History, Botany and Pharmacognosy of Viburnum Opulus L. *var.* Americanum (Miller) Ait.," May 1932, page 444.
H. W. Youngken—"Studies on Commercial Psyllium Seeds," December 1932, page 1265.
H. W. Youngken and A. W. Reed—"A New Field of Investigation in Pharmacognosy: The Microscopy of Glandular Products," December 1933, page 1215.
H. W. Youngken—"Psyllium Seed. II. So-called 'Adex Psyllium,'" May 1934, page 397.
H. W. Youngken—"Further Studies on Psyllium Seed," March 1935, page 207.

References to papers not published in the JOURNAL A. PH. A., follow:
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U. S. P. AND N. F. PUBLICITY PROGRAM IN WASHINGTON.

Arrangements are being completed for a meeting in the AMERICAN INSTITUTE OF PHARMACY on April 9th. On this occasion an instructive program will be presented, dealing with U. S. Pharmacopœial and National Formulary subjects and products of these standards will be part of an interesting exhibit.

Delegates to the Pan-American Medical Congress will be in attendance and officials of the Revision Committees, members of the faculties of colleges of pharmacy, and it is hoped to have a large attendance of pharmacists and a representative number of physicians, dentists and others engaged in medical and pharmaceutical activities.

Part of the program will comprise a Symposium on the new U. S. Pharmacopœia, Spanish Edition, and another—a Symposium on Pharmacopœia XI and National Formulary VI. Invitations are extended to physicians, medical and surgical interns, medical students, dentists, pharmacists and pharmacy students.

SCIENTIFIC SECTION

BOARD OF REVIEW OF PAPERS.—*Chairman*, F. E. Bibbins; Glenn L. Jenkins, John C. Krantz, Jr., Heber W. Youngken, L. W. Rowe, L. W. Rising, C. O. Lee, E. V. Lynn, W. G. Crockett, Frederick V. Lofgren.

RATIONAL USE OF THE EARTHWORM FOR THE EVALUATION OF VERMICIDES.*,[1]

BY GLENN L. JENKINS AND L. LAVAN MANCHEY.[2]

In the course of an investigation on the relation between vermicidal activity and chemical constitution it became necessary to find or evolve a biological method of evaluation which would express the vermicidal effectiveness of individual molecules. The general character of the research made it mandatory that the method to be followed should not require the use of excessive amounts of the material under study because of the limited quantities that were frequently obtained by synthesis. It was also desired that the method adopted be simple, rapid and afford activity values referable to a suitable standard.

It was recognized that the soundness of any method which claims for its objective the correlation of activity with structure depends for its validity not upon a rational principle of evaluation alone, but also upon the exclusion of those factors, such as tolerance of the host to the drug, which have no direct bearing upon the simple intent of the investigation. No attempt was made, therefore, to establish the ultimate values of the compounds in therapeutics. Indeed, to achieve this end would require the perfection of a method embracing so many considerations as to attach doubt to the method.

From the standpoint of applied therapy, the method followed by Hall and coworkers (1, 2, 3), using dogs, is highly informative, because it embraces both the parasitotropic and organotropic factors. This method, however, was not suitable to the existing conditions of experiment. Moreover, the expression "per cent efficiency," which is in reality a measure of the number of parasites eliminated, does not reflect the activities of individual molecules—a knowledge of which chemotherapeutic research demands as the most authentic datum for comparing activities.

In vitro methods employing the worms as experimental animals have been applied according to two general concepts. Either strips of worm muscle are mounted in a tissue chamber and the muscular responses are recorded with the aid of a kymograph, or the effect of the agent is determined by its direct action on the intact object. As will be shown later both methods are open to serious objections if used for studies intended to relate pharmacological activity with chemical structure.

The evolution of the muscle strip methods may be traced through the efforts of

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* Scientific Section, A. PH. A., Portland meeting, 1936.

[1] From the Department of Pharmaceutical Chemistry, University of Maryland, School of Pharmacy.

[2] Abstracted, in part, from a thesis submitted by L. Lavan Manchey to the Faculty of the Graduate School of the University of Maryland in partial fulfilment of the requirements for the degree of Doctor of Philosophy.

Trendelenburg (4), Straub (5), Toscano-Rico (6), Gluschke (7) and others. The authority for these methods depends upon the opinion, long held, that anthelmintics are effective by virtue of a specific action on worm muscle. It seems obvious that by these methods the responses of the tissues measure the irritant properties of a substance to a greater extent than they do any specificity of action attributable to atomic groups or linkages of the molecule. Here, the refinements of measurement depend upon an accurate interpretation of the relation between the tonic and clonic phases of the tissue contractions and upon the reversibility of the processes. The likelihood of these phases being functions of concentration and time of exposure rather than specific action is apparent. Gluschke (7), by highly critical analysis involving careful considerations of concentrations of solutions, character of contractions and tonus increase, concluded that substances such as phenol, cresols, xylenols, thymol, picric acid and naphthols do not possess a specific santonin-like action.

Admitting the truth of the statement, this argument does not dispose of the fact that a number of substances, such as thymol, which Gluschke says are not santonin-like in action, have proven their merit in the hands of fieldworkers combating helminthic infestations. It points only to the limitations of the method in failing to provide a means of comparing the activities of those substances which exert their toxic properties through some tissue other than muscle or are effective because they act through some other route or by some other mechanism.

Among the methods based upon the use of worms as test animals, leeches, earthworms, fish, frogs, vinegar eels and the endoparasites themselves (especially ascarids) have been employed under various experimental conditions. Of these, the classical test object has been the earthworm, since Sollmann (9, 10) demonstrated that all clinical vermicides are markedly toxic to this animal. The effectiveness of the vermicide is based usually upon the survival times of the worms when they are exposed to the action of the substance in a suitable solvent. Schneider (8), however, used as criteria of activity the rates of contraction and relaxation, and to the degree of shortening of the clitellum.

The most common objection to the use of this animal is that it is more sensitive to active substances than the pathological parasites. While the earthworm is more sensitive to chemical agents than the endoparasitic worms, the latter are more susceptible to environmental influences. It is, therefore, difficult to determine to what extent the response of the parasite is caused by its unnatural environment and to what extent by the medicinal agent.

Recently, Butz and LaLande, Jr. (11) have emphasized the importance of using the parasite for which an anthelmintic is sought in determining the probable anthelmintic value of a given substance. In a study of the effects of some oxygenated terpene hydrocarbons upon *Ascaris lumbricoides* they minimized the objectional influence of environmental conditions upon ascarids by maintaining a temperature of 37.5° C. ± 0.5° during the course of the experiment and by limiting the period of observation to five hours. While their method introduces a refinement in technique, the limitation of the observation period imposes the necessity of emulsifying many substances in order to afford concentrations sufficiently high to produce paralysis or death within the stipulated time. It does not seem likely that data obtained by the use of emulsions is accurately comparative with that of true

solutions unless the stability of an emulsion, the degree of dispersion and the emulsifying agent do not influence the measured activity.

In view of the foregoing discussion, the skepticism directed against the use of the earthworm as a test object for the evaluation of anthelmintics is to a great measure justified. Yet, in spite of the objections cited, a number of inferences may be drawn in favor of further study of the quantitative responses of the earthworm to anthelmintics: (A) No scientifically valid expression for vermicidal activity, based upon the use of the intact earthworm, either in terms of absolute or comparative units, has been utilized. Symbols such as "+," "−+,", "++," etc., for designating effectiveness exist chiefly for need of a more accurate and descriptive designation; (B) The greater susceptibility of earthworms over ascarids and other parasites provides for a more sensitive method; (C) A more sensitive test object will detect weaker activity and the use of solutions holding lower concentrations of solute is made possible, thus tending to obviate the necessity of emulsifying many substances.

Earthworms, with regard to their wide availability and the ability to withstand environmental changes are well adapted for routine laboratory experimentation. They may be kept for months in moist earth and will live during the winter months in a warm room, if the ground in which they are placed is moistened frequently with water.

EXPERIMENTAL.

In a preliminary study, it was found that earthworms will live in distilled water for from several days to a week or longer, but that they survive for much longer periods in 0.2 to 0.4 per cent solutions of sodium chloride. In normal saline solution, they show irritation and severe distress symptoms. In 0.3 per cent saline solution, however, three out of three worms were still alive three weeks following immersion. The observation was also made at this time that a number of substances which proved to be toxic to the earthworm produced similar effects along the course of action. The phenomena of toxicity appeared always in the same order, here mentioned, *i. e.*, excitement and irritation passing directly to a stage of clonic or tonic-clonic convulsive movements, followed by loss of irritability, paralysis, impaired dorsal circulation and death. If the convulsive movements are very severe, rupture of the body wall is likely to occur. In the paralysis stage, the segments posterior to the clitellum are the first to be affected. The segments anterior to the clitellum are affected in ascending order. Feeble movements of the prostomium persist for some time after the worms have become otherwise immobile. The convulsant stage is relatively short in duration and may not be observed if the different phases follow one another in rapid succession. Complete cessation of movement is not a proof of death, since by transferring completely paralyzed worms to very dilute saline solutions the power of movement is frequently restored and revival is often complete in several hours, although death may ensue.

It was concluded that the death point is a more suitable and exact criterion of vermicidal activity than any of the other phenomena of toxicity noted. A technique was then developed which made possible the determination of the death point with fair accuracy.

It became apparent that it would be impossible to utilize the same concentrations for all vermicides, owing to the fact that many of the less soluble ones do not afford solutions of sufficiently high concentration to cause death in a time which would be comparative with that of the more soluble substances. The inability to find a suitable common concentration for the preparation of all solutions, or to hold invariable a given time corresponding to a range of concentrations suggested a study of the survival time-concentration relation for several substances, with the object of finding a mathematical expression which would permit the calculation of activities under either identical conditions of time or concentration.

Technique of Method.—The test objects were sound, vigorous specimens of *Lumbricus terrestris* of fairly uniform size, measuring 8 to 12 cm. in a relaxed state.

Object.—To determine the time in which a vermicide is fatal, at a given concentration, to a definite number of earthworms. In our studies, the death point was chosen as that time which would just permit the survival of one of three worms at the concentration used.

Procedure.—The worms are immersed in a solution of known concentration of the substance to be tested, 10 cc. of solution being allotted to each worm used. At intervals, depending upon the concentration employed, three worms are removed at one time by means of a blunt hook, adhering mucoid secretion is removed carefully with cloth or blotting paper and they are then placed in 150-cc. beakers containing 100 cc. of 0.3 per cent sodium chloride solution prepared with distilled water. After 18 hours, the worms in each beaker are examined. By noting the number that have died or recovered in each case, it is possible to determine, at a given concentration, approximately within what time range the death point or survival time lies.

Two or three series or groups of twelve worms each are required for a given concentration. The first group is used for ordinal tests. Three worms are transferred from the solution of the vermicide to the resuscitation bath[1] at 1-, 2-, 4- and 8-hour intervals, respectively.

The second and third groups of worms are used to define more accurately the time limits within which the true survival time lies. Closer time intervals for removing the worms are observed for solutions which cause death speedily than for solutions which require longer periods to be effective.

Survival Time-Concentration Relation.—This relationship was derived by graphing the data obtained through the use of thymol, carvone and pulegone by the method described. These data are recorded in Table I, and are represented graphically in Fig. 1.

TABLE I.

Compound.	Minutes (t).	Moles/Liter (C).	C/t.	Log C/t.
Thymol	3	0.0025	0.000833	−3.08
"	7	0.0020	0.000286	−3.54
"	15	0.0015	0.000100	−4.00
"	35	0.0010	0.0000286	−4.54
Carvone	25	0.007	0.00028	−3.55
"	35	0.006	0.000171	−3.77
"	55	0.005	0.0000909	−4.04
"	110	0.003	0.0000273	−4.56
"	180	0.002	0.00001110	−4.95
Pulegone	40	0.004	0.0001	−4.00
"	80	0.003	0.0000375	−4.43
"	135	0.002	0.0000148	−4.83

Thymol, recrystallized from alcohol, was adopted tentatively as a standard or reference substance, because it possesses recognized value as an anthelmintic and has wide range of effective concentration.

In Fig. 2, the function $\log_{10} C/t$, plotted as ordinates and C, the abscissæ graphed from the data in Table I are seen to be in linear relation.

C is concentration (moles/liter); t, the survival time in minutes.

$$\frac{C}{t} = \frac{\text{concentration}}{\text{survival time}} = \frac{\text{moles/liter}}{\text{minutes}} = \text{"apparent" speed of fatality.}$$

[1] In the resuscitation baths, the substances that have caused paralysis become washed from the tissues and muscular contractility is rapidly regained. The renewed activity appears to be purposeless and, therefore, independent of higher innervation. It may be dependent upon the intrinsic contractile function of worm muscle and should not be interpreted as an indication of permanent recovery. In the final examination to decide upon the number of worms that have recovered, a beam of intense light or direct mechanical stimulation are useful in initiating movements in the recovered test objects. It is helpful also to examine the dorsal blood vessel for the condition of the circulation. A turbid appearance of the solution or the detection of putrefactive odor are certain indications of death.

C/t cannot be regarded as the absolute speed of fatality. It is designated *apparent* speed of fatality, because it is not known how much of the dissolved agent is directly responsible for the death of the test objects.

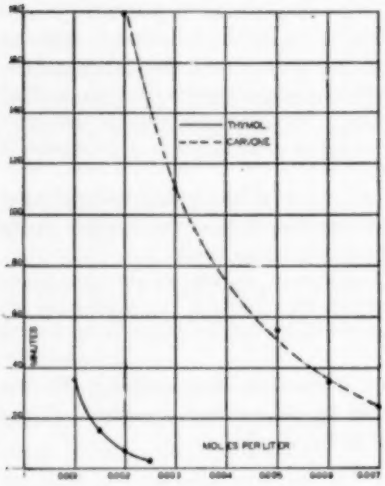

Fig. 1.

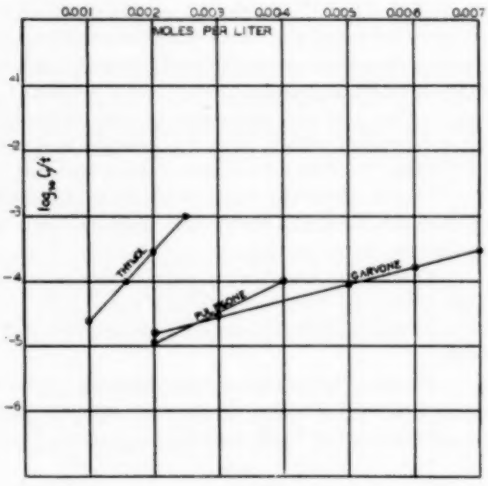

Fig. 2.

The empirical linear equation is

(1) $$\log_{10} C/t = A + BC$$

where B is the slope $\left(\frac{\Delta \log_{10} C/t}{\Delta C}\right)$ and A the intercept on the Y axis. In exponential form, (1) becomes

(2) $$C/t = ae^{bC}$$

The relation between the constants A and B of equation (1) to a and b of equation (2) is

$$A = \log_{10} a$$
$$B = b \log_{10} e = 0.4343\ b$$

The values for constants A and B are obtained from the graphs (Fig. 2). A is the apparent speed of fatality at zero concentration, obtained by extrapolation; B is computed according to the expression

$$B = \frac{\Delta \log_{10} C/t}{\Delta C}$$

Substitution of the computed values for the thymol curve in equation (1) gives

(3) $$\log C/t = -5.6 + 1040\ C$$

For carvone

(4) $$\log C/t = -5.3 + 250\ C$$

The usual criterion of potency in biological assay methods is the dose that will cause a definite physiological effect in a stipulated time. Time is usually fixed as one of the conditions of experiment. Potency varies in an inverse sense with the minimum effective dose, and the potency of an unknown substance in relation to a reference substance is expressed by the ratio

$$\frac{\text{Weight of standard (s)}}{\text{Weight of unknown (r)}}$$

In the present study, the concentrations of the standard (C_s) and of the unknown (C_r) may be substituted for weight of standard and weight of unknown, because the same volume of solution per worm is used in each test.

$$\frac{\text{Potency of r}}{\text{Potency of s}} = \frac{(\text{weight})_s}{(\text{weight})_r} = \frac{\dfrac{(\text{weight})_s}{(\text{volume})_s}}{\dfrac{(\text{weight})_r}{(\text{volume})_r}} = \frac{C_s}{C_r}$$

Since the relative activities of two vermicides are in proportion to the reciprocals of the concentrations at which they act at equal apparent speeds in producing identical physiological effects, then

$$\frac{\text{Activity of r}}{\text{Activity of s}} = \frac{\dfrac{1}{C_r}}{\dfrac{1}{C_s}} = \frac{C_s}{C_r} \tag{5}$$

and when apparent speed of standard (s) = apparent speed of vermicide (r)

$$(C/t)_s = (C/t)_r$$
$$\log (C/t)_s = \log (C/t)_r$$

From equation (1),

$$A_s + B_sC_s = A_r + B_rC_r$$
$$B_sC_s = (A_r - A_s) + B_rC_r$$

For active substances ($A_r - A_s$) is insignificant.

$$B_sC_s = B_rC_r$$
$$C_s/C_r = B_r/B_s$$

Substituting in (5),

$$\frac{\text{Activity of r}}{\text{Activity of s}} = \frac{B_r}{B_s} \text{ (at equal apparent speeds of fatality)}$$

It is thus shown that the activities of two vermicides are to each other as the ratio of their rates of change of log apparent speed of fatality with change in molar concentration, and that B, the slope, is a suitable criterion of activity.

$$\frac{\text{Activity of carvone}}{\text{Activity of thymol}} = \frac{B\ (\text{carvone})}{B\ (\text{thymol})} = \frac{250}{1040} = \frac{0.24}{1.00} \tag{6}$$

If the relative activities of two vermicides are determined from the graphs by comparing the concentrations corresponding to equal values for log (C/t), the coördinates should be extrapolated to the higher concentrations to obtain the most nearly consistent values. The higher concentrations conform more nearly with the doses given in actual treatment and give more consistent values over a wider range of concentration.

It may be more evident that the constants B_r and B_s in equation (5) are expressive of *molecular* activity, if the ratio 0.24/1.00 is derived in another way.

If the "molar vermicidal activity" (V) be defined as log apparent speed of fatality (log C/t) when the vermicide is acting at unit molar concentration, then, when C = 1, let the molar vermicidal activities of two substances, r and s, be to each other as the ratio $V_r:V_s$. Then

$$\frac{V_r}{V_s} = \frac{\log (C/t)_r}{\log (C/t)_s} = \frac{(\log C_r - \log t_r)}{(\log C_s - \log t_s)}$$

When $C_r = 1$

and $C_s = 1$

$$(7) \qquad \frac{V_r}{V_s} = \frac{0 - \log t_r}{0 - \log t_s} = \frac{\log t_r}{\log t_s}$$

For thymol, at unit molar concentration

$$\log (C/t) = -5.6 + 1040 \times 1$$

When C = 1,

$$\log (C/t) = -\log t$$

$$(8) \qquad -\log t = -5.6 + 1040$$

Likewise, for carvone at unit molar concentration,

$$-\log t = -5.3 + 250$$

Letting r represent carvone and s thymol, and then substituting in (7),

$$\frac{V_r}{V_s} = \frac{-5.3 + 250}{-5.6 + 1040} = \frac{0.236}{1.000}$$

If the constant A is dropped,

$$\frac{V_r}{V_s} = \frac{250}{1040} = \frac{0.240}{1.000}$$

The computed values for the slope $\frac{\Delta \log C/t}{\Delta C}$ and for the molar vermicidal activities as referred to thymol are given collectively in Table II.

TABLE II.—SHOWING RELATIVE VERMICIDAL EFFECTIVENESS.

Compound.	$\frac{\Delta \log C/t}{\Delta C}$.	Molar Vermicidal Activity Referred to Thymol.
Thymol	1040	1.00
Pulegone	415	0.40
Carvone	250	0.24

SUMMARY AND CONCLUSIONS.

1. A method, employing the intact earthworm (*Lumbricus terrestris*) as test animal, by which the criterion of molecular toxicity is based upon the rate of change of apparent speed of fatality with change in molar concentration has been developed.

2. The fatality- or survival-time corresponding to a given concentration, as determined by this method, is noted as the minimum time of immersion in an aqueous solution of the test substance which will prevent recovery of two out of three worms in 18 hours.

3. The toxicities of thymol, carvone and pulegone have been determined by this biological method.

The authors express their indebtedness to Dr. E. G. Vanden Bosche and Dr. M. R. Thompson, both of the University of Maryland, for helpful suggestions during the course of the work.

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THE EFFECTIVENESS OF THEELOL BY ORAL ADMINISTRATION.*

BY L. W. ROWE AND A. E. SIMOND.[1]

Since the isolation of two crystalline estrogenic hormones, Theelin or ketohydroxyestrin, $C_{18}H_{22}O_2$, and Theelol or trihydroxyestrin, $C_{18}H_{24}O_3$ (Doisy and collaborators, 1, 2, 3, 4, 5 and Marrian, 6, 7) and particularly since the establishment of an International Standard for the control of potency of such substances, a certain amount of disagreement exists as to their relative potencies.

Prior to the adoption of the International Estrogenic Standard at the London Conference of 1932 with the arbitrary agreement that 1 mg. of this standard should be equivalent in estrogenic activity to 10,000 International Units, the literature showed many conflicting statements by different workers as to the relation between the rat unit and the mouse unit and similarly between the potency of Theelin and Theelol. Thus Curtis and Doisy (5) and also Marrian (7) found that in aqueous solution and by hypodermic administration Theelin was just about twice as active as Theelol. Butenandt (8) found that in oily solution Theelin was 5.3 times as potent as Theelol. Burn and Elphick (9) on the other hand found Theelin to be only 85% as active as Theelol when compared in aqueous solutions in four injections but in oil solution with a single injection Theelin was found to be 4.5 times as potent as Theelol. These workers do not agree at all with Curtis and Doisy or with Marrian but they do agree very well with Butenandt.

Even greater discrepancies exist in the literature as to the relation between the estrogenic rat unit and mouse unit. Although we are not particularly concerned with this phase of the subject in this short paper, for convenience we will summarize the various findings as follows: Laquer and de Jongh (10) using aqueous solutions and dividing the dose into six injections found the rat unit to be four times as great as the mouse unit and the ratio therefore to be 4 to 1; Kochmann (11) for aqueous solutions found the ratio to be 4 to 1 and for oily solutions to be 2 to 1; Marrian working in conjunction with Dickens and Dodds (12), using an aqueous solution and both four and six injections found the ratio to be 10 to 1; Coward and Burn (13), Becker, Mellish, D'Amour and Gustavson (14) and Burn and Elphick (9) all find the ratio to be 1 to 1 if oily solutions are used in a single injection method.

EXPERIMENTAL WORK.

In the series of tests about to be described, the general method of Allen and Doisy (15) and the suggestions of Kahnt and Doisy (16) were followed except that doses were given orally instead of subcutaneously. That is, the oral dose was divided into three parts given at intervals of about four hours to sensitized rats and

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* Scientific Section, A. PH. A., Portland meeting, 1935.

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of 20 rats used at a particular dosage level, about 75 per cent must react positively in order to consider that a positive test.

Many comparisons of Theelin and Theelol by subcutaneous injection in our laboratory have rather definitely established the fact that Theelin is three times as potent as Theelol when each is administered hypodermically to spayed rats, since pure Theelin is found to test from 2500 to 3000 Doisy rat units per mg. while pure Theelol tests 750 to 1000 rat units per mg.

A number of hypodermic tests of the International Standard after it became available, have shown it to contain from 2500 to 3000 Doisy rat units per mg. Other laboratories have assigned different experimental values to this standard of reference so that there is absolutely no uniformity between the International Unit and the Rat Unit as stated by various authorities. For instance Hinglais and Hinglais (17) using an oil solution of the International Standard, divided into three hypodermic doses find that one Doisy rat unit is equivalent to 25 or 30 International Units rather than the usual 3 or 4 which we have found experimentally.

ORAL ESTROGENIC TESTS (ADULT RATS).

The following series of oral tests were made in the early months of 1935 with Theelin of high potency (2500 and 3000 R. U. per mg.) derived solely from mare's urine of pregnancy which is known to contain no Theelol, and with Theelol of high purity:

TABLE I.

Dose.	No. of Rats.	Positive.	Typical.
6 R. U. (subcu.) in 3 oral doses	10	0	0%
8 " " "3 " "	10	0	0%
10 " " "3 " "	10	4	40%
15 " " "3 " "	18	13	72%
15 " " "3 " "	20	14	70%
15 " " "3 " "	20	13	65%
20 " " "3 " "	20	16	80%

At 15 R. U. (subcu.) 40 out of 58 were positive = 70%.

With Theelol, B 869366, which assayed 1000 R. U. per mg. hypodermically the following oral tests were made:

TABLE II.

Dose.	No. of Rats.	Positive.	Typical.
2.0 R. U. (subcu.) in 3 oral doses	10	5	50%
2.0 " " "3 " "	20	12	60%
2.5 " " "3 " "	17	9	53%
2.5 " " "3 " "	20	10	50%
2.5 " " "3 " "	20	11	55%
3.0 " " "3 " "	10	9	90%
3.0 " " "3 " "	20	16	80%

At 2.5 R. U. (subcu.) 30 out of 57 were positive = 52%.
At 3.0 R. U. (subcu.) 25 out of 30 were positive = 83%.

From these recent tests on highly purified Theelin and Theelol where the relation by hypodermic test is about 3 to 1 (3000 R. U. per mg. for Theelin and 1000 R. U. per mg. for Theelol) the nearest basis of comparison by oral dosage is 15 R. U. (subcutaneous) of Theelin is equivalent to 3 R. U. (subcutaneous) of Theelol, or that five times as much Theelin is necessary when given orally as would be necessary of Theelol to produce the same effect physiologically. Thus a prod-

uct containing only Theelol and standardized hypodermically to 200 International Units per capsule would be just as effective *orally* as one containing only Theelin which was standardized hypodermically to 1000 International Units per tablet.

ORAL ESTROGENIC TESTS (IMMATURE RATS).

The effect of the various estrogenic principles when administered orally to *immature* female rats (30 days old) has been studied experimentally in order to determine which is most rapid and effective iu bringing about sexual maturity as evidenced by opening of the vagina (18).

TABLE III.

Product.	Dose.	Results.
	Hypodermic Units. Given orally in 3 doses at 4-hour intervals.	
International Std. (Oil Solution)	30 R. U. (100 Int. U.)	2 out of 10 rats, vagina open on the 4th day. All open on the 5th day
Theelin B 878216 (Oil Solution)	15 R. U.	2 out of 10 rats, vagina open on the 5th day. All open on the 6th day
Benzoic acid ester of Dihydro Theelin (Oil Solution)	30 R. U.	5 out of 10 rats, vagina open on the 3rd day. All open on the 4th day
	15 R. U.	5 out of 10 rats, vagina open on the 3rd day. All open on the 6th day
Dihydro Theelin (Oil Solution)	15 R. U.	3 out of 15 rats, vagina open on the 3rd day. All open on the 7th day
(Aqueous Solution)	15 R. U.	2 out of 10 rats, vagina open on the 4th day. All open on the 6th day
Theelol (Aqueous Solution)	5 R. U.	2 out of 10 rats, vagina open on the 5th day. All open on the 12th day
(Oil Solution)	15 R. U.	8 out of 15 rats, vagina open on the 4th day. All open on the 6th day

Since control rats in our colony reach sexual maturity normally at about 58 days of age on the average, *i. e.*, 28 days after the above tests were begun, it is seen that large doses of all these estrogenic principles (15 hypodermic rat units given orally in 3 doses) complete this process in 4 to 7 days or less than one-fourth of the normal time.

OIL SOLUTIONS versus AQUEOUS SOLUTIONS.

The increasing popularity of oil solutions of Theelin for clinical use intramuscularly, due to the large single doses that can be given with gradual absorption and utilization, has influenced us to report experimental data, both oral and hypodermic, concerning the action of oil preparations upon test animals.

In testing Theelin in Oil by hypodermic administration we find that a single injection is just as effective as when the dose is divided into three parts and injected at four-hour intervals. However, it is impossible to demonstrate experimentally all the activity which is known to be present in an oil solution. That is, if a previously tested lot of crystalline Theelin is accurately dissolved in oil so as to contain 100 rat units per cc. only 75 per cent or 80 per cent of this amount can be found by a careful test of the oil solution due to the reduced rate of absorption of the Theelin from the oil. Thus when the International Standard is dissolved

in oil to contain 1000 international units per cc. and tested at that level, only 30 per cent of the rats showed typical estrus instead of the necessary 75 per cent to make a positive test. When tested at the 800-rat unit level, 70 per cent showed typical estrus which practically met the 75 per cent requirement.

When administered *orally* to spayed rats the several estrogenic principles were relatively less effective *in oil solution* than in aqueous solution. The following table shows this conclusively.

TABLE IV.—OIL SOLUTIONS. HYPODERMIC VERSUS ORAL ADMINISTRATION.

Product. (In Oil. Orally.)	Dose. Orally in Hypodermic Units.	Result.	
International Std.	15 R. U.	Much less than 1 oral unit	
"	30 R. U.	Less than 1 oral unit.	30% typical
"	60 R. U.	More than 1 oral unit.	90% "
"	50 R. U.	More than 1 oral unit.	90% "
"	40 R. U.	Equal to 1 oral unit.	80% "
Theelin	15 R. U.	Less than 1 oral unit.	About 30% typical
No. 877432	50 R. U.	More than 1 oral unit.	90% typical
No. 878216	40 R. U.	Equal to 1 oral unit.	80% "
Benzoic acid	15 R. U.	Less than 1 oral unit.	No effect.
ester of Dihydro	30 R. U.	Less than 1 oral unit.	10% typical
Theelin	33 R. U.	Less than 1 oral unit.	20% "
	60 R. U.	Less than 1 oral unit.	30% "
	50 R. U.	Less than 1 oral unit.	40% "
	75 R. U.	More than 1 oral unit.	90% "
Dihydro	25 R. U.	Less than 1 oral unit.	About 20% typical
Theelin	50 R. U.	Less than 1 oral unit.	About 20% "
	75 R. U.	More than 1 oral unit.	About 90% "
Theelol	5 R. U.	Less than 1 oral unit.	40% typical
	10 R. U.	Equal to 1 oral unit.	80% "

From this data it is seen that 40 hypodermic rat units of Theelin given orally in oil solution are necessary to equal 1 oral unit as contrasted with 15 to 1 for aqueous solutions. With Theelol about 10 hypodermic rat units are necessary while with Dihydro Theelin and its benzoic acid ester about 60 to 75 rat units are necessary to equal 1 oral unit.

SUMMARY.

(1) The adoption of the International Standard and Unit as a standard of reference has not resulted in uniformity or agreement among various authorities as to the relation between the International Unit and the experimental rat unit.

(2) Using Theelin derived from mare's urine of pregnancy and using a pure Theelol from human urine, the relationship between the two by oral dosage was experimentally established at a ratio of 5 to 1; in other words, five hypodermic units of Theelin are required to produce an effect equivalent to that of one hypodermic unit of Theelol.

(3) All the estrogenic principles when given orally to immature rats in doses comparable to those necessary to produce estrus in adult rats by oral administration, will bring about sexual maturity in less than one-fourth the time required normally.

(4) On the basis of animal experiments Theelol appears to be the ideal estrogenic principle for oral use.

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THE BACTERICIDAL AND BACTERIOSTATIC VALUE OF COLLOIDAL CADMIUM PROTEINATE.*

BY W. A. LOTT AND W. G. CHRISTIANSEN.[1]

It has been known for many years that various colloidal silver compounds exert considerable bacteriostatic action and some bacteriocidal action. In more recent years a large number of other heavy metal compounds have been prepared in the colloidal state and found to be somewhat active in these respects. Notable among these were compounds of mercury and copper. Cooper and Nicholas, *J. Soc. Chem. Ind.*, 49, 386T (1930), called attention to the fact that cadmium acetate was germicidal in a dilution of 1:70,000. Since in the cases of silver and mercury, at least, the germicidal action exerted by soluble ionizable salts of the metals is partially retained by colloidal dispersions of otherwise insoluble salts of these metals, it was considered reasonable to expect high bacteriostatic activity and some bacteriocidal activity on the part of colloidal cadmium proteinate. In order to evaluate it for such activity we prepared a reversible colloidal cadmium proteinate, which contained 5.32% cadmium. This preparation was a very satisfactory stable colloidal solution, which after vacuum desiccation, was slowly but completely reversible. It had no bacteriocidal action and only very feeble bacteriostatic action.

EXPERIMENTAL.

Eighty-five grams of gelatin were hydrolyzed by refluxing for one hour in 300 cc. of water containing 6.8 Gm. of 48% potassium hydroxide. Upon cooling, this

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* Scientific Section, A. PH. A., Portland meeting, 1935.

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solution of hydrolyzed gelatin was filtered with the assistance of a few grams of Kieselguhr. To this solution was added dropwise, a solution of 11.8 Gm. of cadmium nitrate dissolved in 50 cc. of water, with vigorous mechanical agitation. The resulting colloidal cadmium proteinate was desiccated, whereupon 58 Gm. of dry powder containing 5.32% cadmium was obtained.

Even in 4% solution this colloidal cadmium proteinate had no germicidal activity against *Bacillus typhosus* or *Staphylococcus aureus*. The growth of *Bacillus typhosus* was restrained in dilutions of 1/1000 but not by 1/1500. The growth of *Staphylococcus aureus* was restrained in dilutions of 1/300 but not by 1/400.

We gratefully acknowledge the assistance of our Biological Research Laboratories in determining the germicidal activity of this preparation.

A VITAMIN E UNIT.*

BY A. J. PACINI[1] AND D. R. LINN.

In the case of vitamin E it seems desirable to express the findings in the unit which shall be somewhat comparable to the units adopted by the U. S. Pharmacopœia for vitamins A and D. This is not now the case with numerous reports that have come to our attention concerning an evaluation of the vitamin E potency of a given product, particularly wheat germ oil.

Essentially, it is attempted to discover the amount of product, say wheat germ oil, that must be fed daily throughout the period of gestation to insure a litter of rats from a mother known to have been vitamin E depleted. Not unusually the total number of milligrams of test product required throughout the period, for example, 525, is used to express the vitamin E content of the oil; a 525-milligram oil. Others prefer to indicate the number of milligrams fed daily, a 25-milligram oil.

Unfortunately, these methods of expression are not alone confusing one with the other, but are contrary to the expression of vitamin A and D units in the sense that a "400-milligram oil" contains considerably more vitamin E than a "600-milligram oil," thus giving rise to the awkward interpretation of a more potent oil showing a lower numerical value. Since vitamin E threatens to become as popular in pharmacalogic usefulness as vitamins A and D, it seems to us desirable to adopt a method for reporting vitamin E units that would be constant with that used by the Pharmacopœia in the cases of A and D.

The details of the method for determining vitamin E will be the subject of a separate contribution and are centered largely around the original methods proposed by Evans, Bishop and Burr. When 25 milligrams of cold pressed wheat germ oil are required daily throughout the period of gestation to insure a litter of rats in a mother definitely known to have been vitamin E depleted, we prefer to describe this as a 40-E oil. The figure is arrived at merely by dividing 1000, the number of milligrams in a gram, by 25, the number of milligrams of the test product required daily to perform biologically; and thus, the expression "40 units per gram" is in keeping with the expression "600 units per gram" of vitamin A, or "85 units per gram" of vitamin D. Of course, this method of expression agrees more

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closely with the vitamin A than with the vitamin D expression in the Pharmacopœia. In the Pharmacopœia the basis of calculation for vitamin A is the daily dose in milligrams, whereas in the case of vitamin D it is the combined dose fed over a period of eight days.

Any wheat germ oil that has been reported upon by the method heretofore employed by Evans and his co-workers can be re-expressed in terms of the unit herein proposed by the simple arithmetical expedient of converting the value to the number of units per gram.

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COMPARISON OF NESSLER'S REAGENT TEST WITH OTHER TESTS FOR ALDEHYDES IN ETHER.*

BY F. N. VAN DERIPE, E. C. BILLHEIMER AND F. W. NITARDY.[1]

The purpose of this investigation was to determine the comparative value of the U. S. P. Nessler's reagent test, the pyrogallol and fuchsine sulphurous acid reagent test[2] and the ammoniacal silver nitrate reagent test for aldehydes in ether. The comparative sensitivity of these reagents to aldehyde, as well as to other impurities which may be present in ether, such as unsaturated compounds, and also their sensitivity to alcohol in ether, was determined. For this purpose there was prepared a highly purified ether, entirely free from alcohol, aldehydes, peroxides and unsaturated compounds, from which was then made a series of samples of ether containing varying amounts of these ingredients with the exception of peroxides. These specially prepared samples of known composition were then tested for aldehyde content with the three reagents mentioned, at the same time observing the effect of ingredients other than aldehyde upon the sensitivity of the test.

The highly purified ether which was used in this investigation was made as follows:

Removal of Unsaturated Compounds.—Resublimed iodine crystals were added to freshly prepared pure anesthetic ether and the mixture allowed to stand for five days. Potassium hydroxide pellets were then added and the flask rotated until the ether was decolorized. The ether was then poured off the residual layer and distilled, collecting only the middle fraction, which was found to be free from unsaturated compounds.

Removal of Alcohol.—This ether was then shaken repeatedly with separate portions of purified distilled water in order to extract the alcohol. It was then shaken with two separate portions of a dilute alkaline permanganate solution, the ether then separated, and dried over fused calcium chloride.

Removal of Water.—The ether was allowed to stand over sodium amalgam, then poured off and distilled, collecting only the middle fraction.

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* Scientific Section, A. PH. A., Portland meeting, 1936.

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[2] Carey, Green and Schoetzow, JOUR. A. PH. A., 22, 1237 (1933).

Specific gravity measurements on this ether indicated that alcohol removal and dehydration were practically complete. The Nessler's reagent test, as well as quantitative tests for aldehyde and peroxide content, which are capable of detecting at least $^1/_2$ part per million of these impurities, gave negative results when applied to this ether. A negative test for unsaturated compounds was also obtained, indicating the product to be absolutely pure anhydrous ether, free from alcohol, aldehydes, peroxides and unsaturated compounds. This ether was now adjusted with purified redistilled water to its original water content of 0.5%, and the preparation of the samples for test by the three aldehyde reagents was begun.

Comparative Sensitivity of Reagents to Aldehyde in Alcohol-Free Ether.—Using the purified ether, which contained 0.5% water, a sample was prepared for test which contained 1 part per million of acetaldehyde. The three reagents gave the following results:

U. S. P. Nessler's reagent	Immediate haze
Pyrogallol and fuchsine sulphurous acid reagent	1 part per million of acetaldehyde
Ammoniacal silver nitrate reagent	No appreciable effect—no different from blank

The results indicate that both the pyrogallol and fuchsine sulphurous acid reagent and Nessler's reagent are sensitive to this amount of aldehyde, but the former reagent gives a quantitative determination. The ammoniacal silver nitrate reagent is not satisfactory.

Comparative Sensitivity of Reagents to Alcohol in Aldehyde-Free Ether.—A series of three samples was prepared from the purified ether containing 0.5% water, which samples contained 0.5%, 1.0% and 1.25%, respectively, of alcohol. The alcohol was purified by treatment with saturated sodium sulphite solution, by separation and distillation, collecting only the middle fraction. This alcohol gave a negative test for aldehydes. The samples of ether containing it were tested by the three reagents, with the following results:

	0.5% Alc.	1.0% Alc.	1.25% Alc.
U. S. P. Nessler's reagent	Immediate haze	Immediate haze	Immediate haze
Pyrogallol and fuchsine sulphurous acid reagent	Negative	Negative	Negative
Ammoniacal silver nitrate reagent		No appreciable effect	

It is evident that the pyrogallol and fuchsine sulphurous acid reagent is not affected by alcohol, but that the Nessler's reagent is, as it gave an immediate positive test in the presence of alcohol and the absence of aldehyde. This was difficult to understand, as tests on the three individual components of the mixture, namely, the ether, alcohol and water, had all been negative by the Nessler's reagent test. The tests were therefore repeated on the individual components, and were again found to be negative. On preparing a fresh sample of the ether containing the alcohol and water, however, an immediate positive test with Nessler's reagent was obtained, again confirming the original results. It is apparent that a mixture of alcohol with ether in the absence of aldehyde produces a positive test with Nessler's reagent, from which it must be concluded that this reagent is not specific for aldehyde since it is affected by the alcohol content of ether. The ammoniacal silver nitrate reagent was found to give no reaction to alcohol in ether.

Comparative Sensitivity of Reagents to Unsaturated Compounds in Alcohol- and Aldehyde-Free Ether.—A sample of the purified ether containing 0.5% water, to which had been added allyl alcohol to a final concentration of 50 parts per million, was used to test the sensitivity of the reagents to unsaturated compounds. Ethylene was found unsatisfactory as an example of an unsaturated compound in place of allyl alcohol for this purpose, as its presence could not be detected by any of the reagents. The following results were obtained on the sample of ether containing allyl alcohol:

U. S. P. Nessler's reagent	No difference between the sample and a blank containing no unsaturated compounds
Pyrogallol and fuchsine sulphurous acid reagent	Negative
Ammoniacal silver nitrate reagent	Same as blank

Apparently none of the aldehyde reagents is affected by the presence of unsaturated compounds in ether.

CONCLUSIONS.

(1) Both the U. S. P. Nessler's reagent and the pyrogallol and fuchsine sulphurous acid reagent are sensitive to small amounts of aldehyde in ether, as low as 1 part per million.

(2) The Nessler's reagent is sensitive to a solution of alcohol in ether as low as 0.5% alcohol and gives a positive test, even though aldehydes are absent. The pyrogallol and fuchsine sulphurous acid reagent is sensitive only to aldehydes, as it is not affected by the presence of alcohol.

(3) The sensitivity of Nessler's reagent and pyrogallol and fuchsine sulphurous acid reagent is not affected by the presence of unsaturated compounds in the ether.

(4) Ammoniacal silver nitrate reagent is unsatisfactory for the detection of small amounts of aldehydes in ether.

A MODIFIED NESSLER'S REAGENT TEST FOR ALDEHYDES IN ETHER.*

BY F. N. VAN DERIPE, E. C. BILLHEIMER AND F. W. NITARDY.[1]

The U. S. P. test for aldehydes in ether has not proven entirely satisfactory because it is not sufficiently sensitive to small amounts of this impurity. The test will show the presence of 50 to 100 parts per million of aldehydes in ether, and can be made more sensitive by using solid potassium hydroxide instead of the solution which is specified by the U. S. P. X, but it is of no value in testing ether which contains considerably less aldehyde, such as 5 to 10 parts per million. A simple Nessler's reagent test will detect the presence of as little as 5 parts per million of aldehyde in ether, but it is also sensitive to alcohol which is present in U. S. P. ether, and is therefore unsatisfactory as an aldehyde reagent. An investigation was therefore made to determine how the Nessler's reagent test could be modified, not only so that the reagent would not be sensitive to alcohol, but also so that it could be used to determine quantitatively differences of 2 or 3 parts per million of aldehydes in ether containing as little as 5 to 10 parts per million.

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Many variations of the Nessler's reagent itself, as well as the conditions under which the test is conducted, were made and their effect upon the sensitivity of the test studied. The proportion of potassium hydroxide to saturated mercury bichloride solution in the reagent was varied but it was found that this change produced no improvement over the Nessler's reagent of standard composition. In fact, the sensitivity of the test was somewhat reduced by the change in composition of the reagent. It was then determined that by diluting the Nessler's reagent with water and varying the proportions of water and Nessler's reagent to ether in the test, the length of time required for a positive test to be obtained was slightly increased, but a distinction could be made between ethers differing in aldehyde content by only a few parts per million. An extension of this line of investigation eventually led to the development of a modified Nessler's reagent test having the sensitivity desired.

It was found that when the Nessler's reagent is diluted with sufficient water before adding to the test sample of ether, the time required for development of the haze indicating the presence of aldehydes is extended and that caused by alcohol still more so, allowing the necessary differentiation, and at the same time it is possible to distinguish differences of a few parts per million of aldehyde in the ether when the total content is not more than 5 to 10 parts per million. The haze develops in the aqueous layer which separates when the solution is allowed to stand undisturbed after the initial shaking. With the amount of water required to dilute the Nessler's reagent, however, difficulty is encountered in securing separation of the emulsion formed during shaking within the time limit necessary for the observation of the results of the test. This was overcome by substituting a saturated sodium chloride solution for the water. Other salts such as sodium sulphate, potassium sulphate and magnesium sulphate, also sucrose and glycerin, were tried, but all found unacceptable because of development of turbidity or color in the absence of aldehydes. Sodium chloride, however, caused rapid separation of the layers and produced a clear, aqueous layer after the shaking period, permitting satisfactory observation of the result of the test at the required time.

Extensive studies were made on the effect of variation in proportion of Nessler's reagent to saturated sodium chloride solution upon the sensitivity of the test and the time required for the haze indicating the presence of aldehydes to develop, in order to find the combination which would give the most satisfactory results. Increasing the amount of saturated sodium chloride solution in proportion to Nessler's reagent retards the development of haze, and if too large a quantity is used prevents distinction between ethers differing in aldehyde content by only a few parts per million. It was eventually found, however, that optimum results were obtained by diluting 1 cc. of U. S. P. Nessler test solution with 17 cc. of saturated sodium chloride solution, adding 7 cc. of this mixture to 20 cc. of ether, shaking for 10 seconds, and then allowing the layers to separate and noting the time required for the first appearance of haze. Best results were obtained when the temperature of the solutions during the test was held at 25° C. Under these conditions results of the following order were obtained, when aldehyde-free U. S. P. anesthetic ether, together with the same ether to which known amounts of aldehyde had been added, were tested:

Aldehyde Content of Ether in P. P. M.	Time in Seconds for Appearance of Haze.
0	900
1	305
2	200
3	145
4	110
5	85
6	75
7	65
8	60
10	50

It will be seen that by using this modified Nessler's reagent under the test conditions outlined above, the reaction due to alcohol is eliminated by time, and sensitivity to small amounts of aldehyde in ether is obtained. It is possible to distinguish differences of a few parts per million in aldehyde content by observing the length of time required for the development of haze. Close observation is required when testing ethers containing 0, 1 and 2 parts per million, but with the larger quantities of aldehyde, the development of haze and its increase occurs with much greater rapidity so that it can be more easily detected. Furthermore, when this modified Nessler's reagent is used, the normal alcohol content of anesthetic ether does not result in a positive reaction within one minute, whereas the presence of from 5 to 7 parts per million of aldehyde in such an anesthetic ether containing alcohol produces a positive test in approximately one minute. Hence we suggest the following as a suitable official test for aldehydes in U. S. P. anesthetic ether.

Place 20 cc. of ether in a colorless glass-stoppered cylinder and add 7 cc. of a mixture of 1 cc. of alkaline mercuric potassium iodide T.S. with 17 cc. of a saturated solution of sodium chloride. Stopper the cylinder and shake vigorously for ten seconds, then set aside for one minute; the aqueous layer shows no sign of turbidity.

This test we believe has since been accepted for the U. S. P. XI.

SUMMARY.

(1) The U. S. P. X test for aldehydes in ether is not sufficiently sensitive to small amounts of this impurity. The simple Nessler's reagent test is considerably more sensitive, but produces a positive reaction in the presence of alcohol when aldehydes are absent, and is therefore unsatisfactory as an aldehyde reagent.

(2) A modified Nessler's reagent has been developed which is sensitive to 1 part of aldehyde per million in ether and which will not react with the alcohol present in the ether in the time limit required for detection of aldehydes. It is also satisfactory for quantitative estimation of aldehydes in ether containing 10 p. p. m. or less in the hands of a careful worker.

"A magnificent educational system, an impressive literature, libraries and research institutions, and a highly efficient manufacturing drug industry are some of the great contributions of pharmacy."—R. L. SWAIN in *Drug Topics*.

THE F. D. A. TEST FOR ANTISEPTIC VALUE OF LIQUOR ANTISEPTICUS.*

BY ESTHER MEYER AND E. N. GATHERCOAL.

THE CULTURE MEDIUM.

According to the directions given in Circular No. 198, published by the United States Department of Agriculture and titled, "United States Food and Drug Administration Methods of Testing Antiseptics and Disinfectants" (1931), the following medium was prepared:

Liebig's Beef Extract	5 Gm.
Sodium Chloride C.P.	5 Gm.
Peptonum Siccum (Armour's for disinfectant testing)	10 Gm.
Distilled Water	1000 cc.

This mixture is boiled for 20 minutes, made up to original weight (or volume) with distilled water, and adjusted with NaOH to p_H 6.8 using the colorimetric method. It is then filtered through paper, tubed (10 cc. to each tube) and the tubes are sterilized at 15 pounds' pressure for 40 minutes.

Comment.—The medium made according to the above directions is quite cloudy. One batch was clarified by the admixture of talc and then filtered through paper; the resultant broth was clear. It is easier to read the results of the test when clarified broth is used.

THE TEST ORGANISM.

The test organism is transferred daily in this medium for not more than one month. At the end of each month, a fresh transfer is made from the stock culture. The stock culture is carried on agar slants of the same composition as the broth medium, plus 1.5 per cent of *Bacto Agar*, and adjusted to from p_H 7.2 to 7.4. The stock culture is transferred once a month and the test organism is taken from the month-old stock culture. When the test organism has not been transferred daily, it is advisable to make three consecutive daily transfers in broth before using it for testing purposes.

PHENOL.

The phenol used must be U. S. P., and in addition, the congealing point must not be below 40° C. A 5 per cent solution may be used as a stock solution if kept in a relatively cool place in well-stoppered, amber-colored bottles protected from the light. This 5 per cent solution should be standardized with decinormal bromine or with sodium bromide and bromate solution.

PHENOL RESISTANCE OF THE TEST CULTURE.

According to the F. D. A. method, developed by G. F. Reddish the *Staphylococcus aureus* culture should show the following resistance to phenol at 37° C.:

Phenol.	5 Min.	10 Min.	15 Min.
1-80	+	0	0
1-90	+	+	+

* Scientific Section, A. PH. A., Portland meeting, 1936.

Phenol.	5 Min.	10 Min.	15 Min.
1–80	+	0	0
1–90	+	+	0

It is not an easy matter to find a culture of suitable phenol resistance and to maintain it so. Four strains were tried including the Food and Drug Administration strain of *Staphylococcus aureus*, known as "A 209." According to our experience, not one strain, including "A 209," really coincides with the required phenol resistance. Upon further experiments with these four strains it was found that there was a day-to-day variation in their resistance to phenol. This may be partially explained by the fact that some broth cultures show very granular growth, while others show a uniform diffused growth. The former are more resistant than the latter, probably due to the fact that the bacteria, when in clumps, are not so easily killed by the antiseptic solutions. Agar petri dishes spread with a drop of the broth culture of granular growth show a large number of "R" colonies while the diffused type of growth yields entirely "S" type colonies. This is not to be considered as a real dissociation, for a transfer made from a tube showing granular growth may give rise to the diffused type of growth. Therefore, the change was only a transient one. Smyth (1934) observed similar growth and says, "When incubated above 36.5 all broth cultures were of the 'R' type, with flocculent turbidity and pellicle in twenty-four hours, while below this temperature the turbidity was uniform." It seems doubtful, however, that this is the only reason, for several different strains which were incubated under exactly the same conditions did not all yield granular growth.

Others working with *Staphylococcus aureus* have experienced this day-to-day variation in the same culture, and Cohen (1922) found a probable error of 2 or 3 per cent under the most ideal conditions, and as high as 10 per cent in most of his work. Smyth (1934) published the results of his detailed experiments on factors influencing the phenol resistance of *Staphylococcus aureus*, and concluded that any small deviation, such as concentration of disinfectant and of cells, the temperature at which the disinfection test is conducted, the age of the culture and even a 1° difference in the incubator temperature, will cause variations.

The following are the four charts showing the phenol resistance of tested cultures:

STAPHYLOCOCCUS AUREUS (CORDELL STRAIN).

Phenol.	5 Min.	10 Min.	15 Min.
1–80	−	−	−
1–90	+	+	−

STAPHYLOCOCCUS AUREUS (AMER. TYPE CULTURE COLLECTION NO. 4691).

Phenol.	5 Min.	10 Min.	15 Min.
1–80	−	−	−
1–90	+	−	−

STAPHYLOCOCCUS AUREUS (AMER. TYPE CULTURE COLLECTION NO. 4776).

Phenol.	5 Min.	10 Min.	15 Min.
1–80	−	−	−
1–90	+	+	+

STAPHYLOCOCCUS AUREUS (U. S. DEPARTMENT OF AGRICULTURE A 209).

Phenol.	5 Min.	10 Min.	15 Min.
1–80	–	–	–
1–90	+	+	–

Dr. Leila Jackson, the assistant curator of the American Type Culture Collection, in a personal communication to the author, said that difficulty was experienced in keeping *Staphylococcus aureus* cultures to the required standard for use in phenol coefficient testing. A culture may be suitable at one time and not at another time and complaints from clients regarding this matter were frequently received.

Because of the foregoing facts, standards, as to the phenol resistance of the organism, in the test for antiseptic value to be included in the National Formulary have been established as follows:

Phenol.	10 Min.
1–80	–
1–90	+

LIQUOR ANTISEPTICUS, N. F. VI.

Three antiseptic solutions were prepared according to the following formulas:

	Solution A.	Solution B.	Solution C.
Boric acid	25.0 Gm.	25.0 Gm.	25.0 Gm.
Thymol	1.0 Gm.	0.75 Gm.	0.5 Gm.
Chlorothymol	1.0 Gm.	0.75 Gm.	0.5 Gm.
Menthol	1.0 Gm.	1.0 Gm.	1.0 Gm.
Eucalyptol	2.0 cc.	2.0 cc.	2.0 cc.
Methyl salicylate	1.0 cc.	1.2 cc.	1.2 cc.
Oil of thyme	0.3 cc.	0.3 cc.	0.3 cc.
Alcohol	300.0 cc.	300.0 cc.	300.0 cc.
Distilled water, *q. s.*	1000.0 cc.	1000.0 cc.	1000.0 cc.

TECHNIQUE.

A 24-hour culture of *Staphylococcus aureus* No. 4776 was used in testing the antiseptic solutions at 37° C., 0.5 cc. of the culture was added to 5 cc. of the antiseptic solution; at 5-minute, 10-minute and 15-minute intervals, one loopful was transferred to sterile broth tubes; the tubes were incubated for 48 hours at 37° C., and readings taken.

The following charts show the results obtained:

Antiseptic Solution (A).	5 Min.	10 Min.	15 Min.
Trial 1	–	–	–
Trial 2	–	–	–

Comment.—Liquor Antisepticus (A) also killed the test organism at 1-, 2- and 3-minute intervals.

Antiseptic Solution (B).	5 Min.	10 Min.	15 Min.
Trial 1	+	–	–
Trial 2	–	–	–

Antiseptic Solution (C).	5 Min.	10 Min.	15 Min.
Trial 1	+	−	−
Trial 2	+	−	−

Solution A has been approved as the official Liquor Antisepticus.

Comment.—To further substantiate the antiseptic value of Solution A, the other three strains of *Staphylococcus aureus*, mentioned previously in this paper, were used as test organisms and in each case the 5-minute, 10-minute and 15-minute tubes were sterile. This would further indicate that the phenol resistance of the organism need not necessarily be so stringently standardized, unless extremely careful research work be the objective.

As a matter of interest, the following preparations were tested for their antiseptic powers:

(1) Surgical solution of chlorinated soda assaying 0.48 per cent of NaOCl and 0.46 per cent available chlorine, killed *Staphylococcus aureus* at 5-minute, 10-minute and 15-minute intervals.

(2) Alcohol (35 per cent) did not kill *Staphylococcus aureus* in 5-minute, 10-minute or 15-minute intervals.

(3) Silver Nucleinate (*Argento-Proteinum Mite* U. S. P.) 10 per cent solution exhibited only bacteriostatic action in 5-minute, 10-minute and 15-minute intervals.

(4) Silver Nucleinate (*Argento-Proteinum Mite* U. S. P.) 20 per cent solution killed *Staphylococcus aureus* in 5-minute, 10-minute and 15-minute intervals.

(5) Hydrogen Peroxide (U. S. P.) did not kill *Staphylococcus aureus* in 5-minute and 10-minute intervals but did in 15 minutes.

(6) "Pepsodent Antiseptic" killed *Staphylococcus aureus* in 5-minute, 10-minute and 15-minute intervals.

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OINTMENTS.*

BY RALPH W. CLARK.[1]

Lee and DeKay (1) in discussing an ointment base for official ointments say, "The criticisms of the official ointments are in a large measure traceable to their bases. The usual story about them is that they become rancid or grainy or are too stiff or too soft. . . . An ideal ointment base, is, of course, a pharmaceutical dream that has never come true and perhaps never will." They propose a simple base composed of white wax and anhydrous wool fat, of each 5 per cent and 90 per cent of white petrolatum for use in a general way as an ointment base.

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* Section on Practical Pharmacy and Dispensing, A. PH. A., Portland meeting, 1935.

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During the past few years research has been conducted which indicates that the old classification of ointment bases, *i. e.*, epidermatic, and endermatic and diadermatic or systemic, making use of petrolatum, lard, also vegetable fats and wool fat, respectively, as typical bases, is possibly due for some change. It also becomes apparent that each medicated ointment must be subjected to series of pharmacological tests before the best base may be used to secure the desired results. The first thing to be considered is whether an ointment is wanted which will be absorbed through the skin or by the skin.

Sollmann (2) points out that the chief reasons for the use of wool fat are its advantage of forming salve-like emulsions and its adhesiveness. For a protective layer petrolatum may suffice. He suggests the use of lard when the ointment is to be rubbed in by friction. This is a statement which points in the direction indicated by recent extensive work in this country and abroad. The absorption of substances through the skin varies greatly. The behavior of medicinal agents to be used even before they are incorporated in the ointment base is desirable as well as a study of the finished product. Gershenfeld and Miller (3) report on the varying bactericidal efficiency of 2 per cent phenol ointments and recommend water-miscible vanishing cream formulas as bases for this and other bactericidal agents.

Some substances are absorbed readily, for instance, Vitamin D. Amrhein (4) has shown that Vitamin D can be absorbed from the skin, the vehicle apparently having little or no effect in the absorption test since the vitamin was absorbed from both vegetable and mineral bases. It was demonstrated that cosmetic creams could also be used for carrying vitamin substances.

Brown and Scott (5) found that maximum absorption of methyl salicylate was from a 11.8 volume % suspension in water, the next best from a 50% alcohol solution, and the minimum from the pure ester. On a percentage basis the 50% volume in olive oil and lard oil was 29% better than the pure ester, anhydrous lanolin and petrolatum 26 and 66% better, alcoholic solution 414% better, and the aqueous suspension on this basis is 632% better. Massage increased absorption 34% to 158%. Rise of temperature from 32° to 42° increased absorption from 143° to 175°.

Kahlenberg (6) noted that boric acid was quickly absorbed by the skin from a saturated solution. He found that a dilute hydrochloric or a dilute sulphuric acid solution foot-bath increased the alkali reserve while a citric acid foot-bath increased the acidity of the blood. He could not explain this as when taken internally these substances react in the opposite manner. He concludes that with the latter findings one should not be surprised to find boric acid acting in a different manner when applied externally in an aqueous solution as compared to being taken internally or applied as the solution of one of its salts. In a later work Kahlenberg (7) found that boric acid passes into the urine in 50–55 seconds when the feet are immersed in a saturated solution at 45 degrees.

"This obviously represents the circulation time plus the time of absorption and secretion. The real time is probably somewhat less than that actually noted, for the observation depends on the sensitiveness of the test. Possibly if larger samples of urine had been taken earlier than 50 seconds and their residues tested, indication of the presence of boric acid might have been obtained even a little sooner. Physiologists have estimated the circulation time in man at about 20

to 30 seconds, the results, of course, being only approximate for in such experiments different paths are open to the blood in completing the circuit."

In a short discussion of the resorption of pharmaceuticals through the skin, Liesegang (8) points out that the work of Whitehouse and Ramage (9) contradicts that of Brown and Scott (10).

Whitehouse and Ramage have shown previously that the human skin is permeable to water, under physiological control, partially regulating body temperature, yet salts and colloidal substances do not appear to diffuse through the epidermis, so that in this respect it seems to play the part of a semi-permeable membrane. Upon immersing the arm in solutions of varying concentration of (*a*) lithium chloride (lithium kation) and (*b*) KI (I-anion) at 75–93° F. (to increase circulation of blood in skin and thus facilitate diffusion) no additional lithium (spectroscopic method) or iodine (chemical assay) was found in urine. An experiment in which iodine ointment was rubbed on the skin showed a definite increase in the iodine content of the urine after application and indicated that un-ionized iodine is absorbed.

Fischler (11) discusses the emulsion types of ointments stating that the water-in-oil class has greater penetrating properties while pure fats and petrolatum lie on the surface.

He mentions cholesterin and oxycholesterin as emulsifying agents for salves as well as certain patented emulsifiers.

Poethke (12) discusses the theory of emulsification, a sub-division of which is the water-containing salves. He adds Euzerit, a patented unsaturated alcohol isolated from wool fat as an emulsifying agent. A mixture of 5 per cent of Euzerit with paraffin ointment is the product known as Eucerin (Aquaphor). He suggests the use of soaps and lecithin for the preparation of oil-in-water ointments. He calls water-in-oil ointments cool ointments and the other type covering ointments. In addition to the base the nature of the medicinal substance is important.

The theories of emulsification are discussed at length by Clayton in his book on the "Theory of Emulsion," 2nd Edition (1928). The writer is informed that this valuable book is at present out of print pending the publication of a new edition. Clayton is quoted very frequently by writers discussing the emulsion type of salve, cream or ointment. It should also be said that much investigation is being carried on in this field by the cosmetic industry as is noted by looking through *Drug and Cosmetic Industry* and other similar magazines for the last few years.

In an earlier work Moncorps (13) found

1. The water-combining properties of salves and pastes depend upon the emulsion process used.
2. Two classes of emulsions are involved in water-containing salves: Water-in-oil as most frequent and oil-in-water as the least frequent types.
3. The emulsion type depends in the first place upon the emulsifier and further upon the manner of preparation and the relation of water to fat.
4. The cooling property does not depend on the amount of water incorporated but upon its possibilities of evaporation. The evaporation is aided by oil-in-water emulsions or coarsely dispersed unstable water-in-oil emulsions.
5. One is able, with the aid of emulsifiers, to bring fats, oil and waxes or any hydrocarbon of the methane series into the desired emulsion form.

6. The action of water-in-oil emulsion ointments may be a double one—depending on the stability of the emulsion and its method of application—with stable emulsions upon the application of a heavy layer and a sufficiently long period of action can be compared with the action of an impermeable moist dressing. With unstable water-oil emulsions, under the same conditions, the action may be compared to the oil-water emulsion and with a moist permeable dressing.

7. Speaking of the various emulsion forms, the absorption of the vehicle and the incorporated medicaments depend upon various conditions.

This latter writer (14) in an article entitled "The Resorption and Pharmacodynamics of Salve-Incorporated Salicylic Acid" concludes:

1. Findings *in vitro* about the giving off possibilities of different bases for salicylic acid permit no retro-conclusions about the processes of adsorption and resorption going on under therapeutical conditions.

2. The extent of salicylic acid adsorption and resorption or as the case may be, of keratolysis, depends in addition to the choice of the base, to a great extent, on the way of application.

3. For the dermatological salve bandage there resulted with reference to resorption, measured in the progress of the elimination curve in the urine, the following gradation: benz. lard, paste of zinc oxide, vaseline, lanol. cum aq. (20%), physiol. A., physiol. B., eucerin cum aq. (50%), physiol. C. The discharged salicylic acid quantity is proportioned as follows: 1:-1.2:2.4:3:8.4:10:15:40. It amounts in a minimum with hog fat to 0.29% and a maximum with physiol. C. to 11.82% of the applied salicylic acid quantity with 24-hour salve application.

4. In the case of the bases occurring in emulsion form (physiol. C.—oil-in-water and eucerin—water-in-oil) the keratolitic effect appears, the method of application of the dermatologic salve bandage presumed, in a concentration of from 0.5% to 1% while with lanolin and vaseline, the same became manifest at 5% and with hog-fat and zinc paste first at 15%.

5. With the rubbing in of salicylic acid salves, only a slight resorption takes place with 5% concentration (5 Gm. on 0.16 sq. cent. of skin). No quantitatively noticeable quantities of salicylic acid in the urine could be proved. The salicylic acid identification is successful first at a concentration of 25%. The salicylic acid speculum in the urine rose with the application of vaseline, lanol. c. aq. (20), benz. lard, zinc paste, physiol. C., eucerin c. aq. With the application of the last-named base, on the average 3.4% of the applied salicylic acid was discharged.

6. The salicylic acid discharge is quantitatively not determinable about six hours after taking off the bandage.

7. The keratolitic action of salve-incorporated acid is strengthened when suitable conditions are given favoring the possibility of the swelling of the horny skin, partly in the physicochemical properties of the salve itself or in the application method.

8. Salicylic acid in aqueous solution in the form of permeable moist bandages is not able to create a keratolysis nor does a stronger resorption take place in contrast to the alcoholic solution.

9. The alkali reserve of the blood is not influenced by the salve-incorporated salicylic acid.

The writer does not claim to have covered the field of ointments in this paper. His purpose was to review only a few articles which point to the importance of extensive research on each ointment to find the base best suited to the action desired.

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A SERVICE THAT BUILT A PRESCRIPTION BUSINESS.*

BY L. D. BRACKEN.

This paper is an attempt to briefly relate the use of an unusual idea in the building or developing of a prescription business.

After several years of practical experience in drug stores of the Middlewest the writer entered a pharmacy college on the Pacific Coast, and thereafter a medical college on the Atlantic Coast. He was impressed with the fact that both types of colleges did not teach enough practical therapeutics. The turmoil of the World War interrupted his medical college work, after one and one-half years. He reentered the drug field in a general store; later, in 1921, he launched into exclusive prescription business. Key locations (medical buildings) were not available, so a location one block from a commercial building housing about forty doctors was chosen as a starting place. A limited amount of capital made necessary a small stock, and the potential prescribers in the above-mentioned building were solicited and asked regarding their likes and dislikes on most popular drug items, brands, etc. The reactions and responses of most of the doctors were encouraging, and the store was duly opened on December 15, 1921.

The writer concluded from experience in school, that lack of practical therapeutics in the curriculum of both medical and pharmacy colleges left a vulnerable spot, and with this thought in mind, it was decided to undertake a direct mail *Bulletin of Information Service* to the doctors.

The first bulletin was typewritten on legal size paper, printed as a letterhead, with a 3″ x 4″ cut in the lower right-hand corner which read "We invite you to phone Main 2110 for dependable information." The message was addressed to the individual doctor and started with this statement—"Dear Doctor: We offer the following information"—the subject matter was limited to four paragraphs. Each paragraph stated brief information of unusual character about some product in which we thought the doctor would be interested. In this first bulletin we informed the doctors that "Arsenicals were about to be made available through the drug trade." From the first issue of 155 bulletins we received eleven requests for further information regarding "Arsenicals," such as "When will you have it in stock?," "How much will it cost?," "Can you supply literature?," etc. This response was thrilling, and the success of the idea seemed assured. However, it required almost a year before we were justified in really saying it was a success.

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* Section on Practical Pharmacy and Dispensing, A. PH. A., Portland meeting, 1935.

We discovered immediately that extreme care must be used in making any statements regarding medicinal products, and for that reason we confined ourselves almost exclusively to official products or new and nonofficial items.

The requests for information which finally began to come in are most interesting. For several years a file was kept of the unusual questions, which were recorded as near as possible *in the exact words* in which they were received. A request for the dose of Digitalis or some question comparable, was not recorded, as any pharmacist should be able to furnish this answer; but how many pharmacists could answer this one which came in from a large Hospital? "Send us some serum Bilirubin and tell us the dose;" and from a physician—"What antidote besides Sodium Thiosulphate is available for 606 poisoning?;" and this from another physician—"What have you to stop uterine bleeding, Ergot has no effect?;" and this from a Hospital—"Send us some Tololo Tablets." This was interesting; we saw the patient's chart and the order read "Tololo Tablets." However, careful study showed the order to mean "10-10-10 Tablets." The order had been hurriedly written, the figures run together, and "tololo" was plainly written thereby. This from another physician—"I have a woman patient thirty-two years old with a blood sugar of 70; give her something to increase her blood sugar, she has plenty of sugar intake." This from an M.D.—"Send me something quick to remove mercurochrome stains from my trouser leg." This from an M.D.—"Send me some Streptococcic Serum for Cardioarthrides." This from a nurse—"Doctor wants a complete outfit for Arsphenamine with scale for neutralizing according to Stokes." From an M.D.—"What can I give my wife for a persistent hacking cough; something without narcotic?" This from a large clinic—"Send a course of Urea for Blood Urea test; patient weighs 172 pounds."

These references are a few of a great many requests which have been collected over a period of fourteen years.

Our mailing list now comprises about six hundred names and includes the pharmacists in hospitals and many of our competitors.

During this fourteen-year period we have introduced a number of new products for ethical pharmaceutical houses; this idea is a decided advantage to us and helps the manufacturer in rapidly gaining an entrée for his product. On several occasions we have used our *Bulletin* to condemn fraudulent practices on the part of unscrupulous firms; this has been appreciated by the Medical Profession and we have received many compliments from their Association.

The material used in this service is mostly drawn from ethical, medical and pharmaceutical publications. Manufacturers' reports and literature are also used, if the claims are conservative and the firm has a good reputation. The source of all our information is recorded and is frequently used and loaned to doctors and dentists. We try to publish some propaganda on N. F. and U. S. P. in each number. We no longer publish prices on office supplies, but we do mention the price on new items.

This bulletin service has cemented a bond of friendship and confidence between the doctors and our store that has more than compensated for the effort and expense involved. Seven registered pharmacists, a bookkeeper, two porters and two motorcycle deliverymen are now employed by the firm and the business has grown to a volume near six figures.

IS EXTEMPORANEOUS PHARMACY A MORIBUND ART?*

BY WILLIAM F. REINDOLLAR AND HOWARD E. CHANEY.[1]

The increase in competition resulting from a variety of economic causes has driven the retail pharmacist away from the scientific phases of his profession and into an ever-broadening field of merchandising. The development of large pharmaceutical manufacturing houses which offer the galenicals of the United States Pharmacopœia and National Formulary accurately standardized, attractively packaged and reasonably priced, has gone far toward eliminating the preparation of these products in the laboratory of the retail drug store. That this is an unwholesome condition for professional pharmacy is accepted without dispute. It is interesting, however, to consider whether this loss of "pharmaceutical application" has been attended by a corresponding loss of skill, or a waning interest in the practice of pharmacy. Warning notes have already been sounded (1, 2) upon this subject. No one doubts, that with the training he receives, the retail pharmacist is capable of preparing galenicals that will meet the requirements of purity, strength and composition laid down by the Official Standards, but the question often arises: Does he?

It has been the purpose of this investigation to study certain simple pharmaceutical preparations which it is believed were compounded in the retail drug store. To make a proper selection, one that eliminates the "machine made" product, is more difficult than one would perhaps believe. When inquiry was made of the retail pharmacist concerning the source of such simple galenicals as Camphor Liniment, Ointment of Zinc Oxide or Aromatic Spirit of Ammonia, the invariable reply was that they were purchased rather than compounded. Owing to this condition recourse was had to certain unofficial capsules and solutions that are generally prepared extemporaneously. Only three of the pharmacopœial galenicals were included in the study, there being considerable evidence that these were produced by the retail pharmacist.

The types of samples and the number of each group examined appear in columns one and two of the table. An arbitrary limit of ten per cent variation on either side of the official or defined value of the principal ingredient was accepted in every case, except that of Basham's Mixture, where the more generous tolerances of the U. S. P. were employed. The percentage of each group falling below, above and the total beyond the empirical tolerance, together with the extreme variations, are recorded.

Sample.	No.	Limits of 10% Tolerance.	Percentage. Below.	Above.	Beyond.	Extreme Limits.
Aspirin Capsules, 5 grs.	170	4.5 – 5.5 grs.	8.8	24.1	32.9	3.94– 7.70
Quinine Capsules, 3 grs.	54	2.7 – 3.3 grs.	29.6	11.1	40.7	1.19– 3.69
Quinine Capsules, 5 grs.	178	4.5 – 5.5 grs.	30.3	16.8	47.1	2.75– 6.70
Diluted Hydrochloric Acid	235	9 –11 Gm.	11.3	36.6	47.9	1.54–16.89
Basham's Mixture-Ammonia	76	0.6 – 0.8 Gm.	9.2	30.3	39.5	0.29– 0.94
Basham's Mixture-Iron	76	0.16– 0.20 Gm.	14.5	29.0	43.5	0.09– 0.34
Lugol's Solution-Iodine	56	4.5 – 5.5 Gm.	21.4	5.4	26.8	2.57– 5.89
Lugol's Solution-Potassium Iodide	56	9 –11 Gm.	1.8	12.5	14.3	8.78–14.06

* Section on Practical Pharmacy and Dispensing A. PH. A., Portland meeting.

[1] Contribution of Bureau of Chemistry, State of Maryland Department of Health.

Sample.	No.	Limits of 100% Tolerance.	Percentage. Below.	Above.	Beyond.	Extreme Limits.
Argyrol Solution—10%	5	9 - 11 Gm.	40.0	40.0	80.0	8.16- 12.12
Argyrol Solution—15%	14	13.5 - 16.5 Gm.	28.6	21.4	50.0	6.54- 26.12
Potassium Permanganate Solution—1%	51	0.9 - 1.1 Gm.	9.8	15.7	25.5	0.30- 1.51
Saturated Solution Potassium Iodide	59	90 -110 Gm.	25.4		25.4	55.3 -103.1

Discussion.—A cursory examination of these results is rather depressing. A substantial percentage of every group falls beyond the ten per cent limits. With the sole exception of the potassium iodide solution, where saturation prevents it, the tolerance is exceeded both in the lower and the upper ranges. While the extreme variations must not be considered too seriously, they serve to show how wide of the mark the pharmacist's effort sometimes falls.

As has been observed before, the percentage of samples containing an excess of active ingredients compares favorably with those that are deficient. This seems to eliminate desire for sophistication as an underlying cause. What then is the explanation of these deplorable data? Can it be that from lack of application the retail pharmacist is losing both the capacity and the desire to practice his profession? Is Extemporaneous Pharmacy a moribund Art?

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YOUR OPPORTUNITY FOR PUBLICITY.*

BY HOWARD STEPHENSON.

An editor, whose trade is occupied with words, is always bound to stand in some trepidation before a body of scientists such as this, because deep in his heart he knows that here are representatives of a class of men and women, alone of all the world's inhabitants, who know more peculiar and strange and awesome words than he has ever included in his ken. Therefore if I have seemed to blink and gulp on more than one occasion, during your sessions, please believe that it was simply in an attempt to swallow and absorb at once the marvelous succession of polysyllables which I have heard issue from the lips of other speakers.

To-day I have not come, however, to deal with words. The AMERICAN PHARMACEUTICAL ASSOCIATION, as the mother organization of all pharmaceutical bodies in this country, is bound to have this year a very deep concern for the economic welfare of the pharmacists of this country, who find themselves faced in many cases with an almost hopeless prospect for the future. If through you I may pass on to them some practical assistance in the operation of the 55,000 retail pharmacies of the country, by putting the weapon of publicity into their hands, that is a service worth the rendering and one to which I shall address my brief remarks.

When we consider pharmacy in relation to publicity, our thoughts naturally

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* Section on Education and Legislation, A. PH. A., Portland meeting, 1935.

turn at once to the one week of the year, in October, during which the profession of pharmacy is publicized to its advantage on a national scale. In my files are clippings from 800 American newspapers which in 1934 published news and editorials on Pharmacy Week. I believe that this publicity, accorded to the profession at large, is the greatest public recognition it has ever received. This year, we who have publicity plans in hand are hopeful of an even greater response to our efforts.

Many hundreds of drug stores last year entered the national window display contest ably conducted by Dr. Hogstad and his associates during Pharmacy Week. Each of these stores, whether or not its display won a prize, gained public esteem and appreciation of incalculable value.

The efforts in the promotion of pharmacy gardens as public or semi-public institutions is well known to most of you. Yet I will not conceal from you the fact that the pharmacy garden movement has scarcely begun to capitalize on its possibilities. Here is an opportunity and a real one for every local and state pharmaceutical association in the country. Nor should we except the National Institute of Pharmacy in Washington, on whose grounds, I deeply feel, a pharmacy garden should be an important project, a show-sight of the nation's capital, attracting thousands of visitors each year.

Why do I refer to the pharmacy garden as a means of publicity? It is because this type of project is eagerly taken up by important groups in every city, public officials look kindly on it and the newspapers are generous in giving it publicity. It directs and focuses public attention upon the professional aspect of pharmacy and does much to set the pharmacist aside, in the public mind, from other merchants whose businesses may lack the tradition, romance and general interest of your own.

I shall but mention in passing the important project which Frank A. Delgado of the Department of Commerce has set forth in detail at your convention—the possibility of inducing the government to issue a special Pharmacy stamp. This impressive plan, which Mr. Delgado did me the honor of outlining at length in *American Druggist* in the two most recent issues, is practical and worth undertaking. I sincerely hope the ASSOCIATION will receive a report at its 1936 convention that the Pharmacy stamp issue is shortly to become an actuality.

There is no need to labor the point of advantages to be gained by these varied types of publicity. Every pharmacist benefits from each of them. But I do want to impress upon you the fundamental thing which lies behind all such publicity—in order to obtain it, something had to be accomplished, by the profession, which had true merit. That is the principle behind all publicity. It is not a matter of seeking out an editor, or a writer, and asking for a little or a grandiose puff for an individual store, school, organization or association. *First*, get something done which is worth talking about. After that, publicity will be added unto you without any but the most legitimate efforts.

To be specific, let us examine what the retail pharmacists of Birmingham, Alabama, have done this past year. I doubt whether there is a city in the United States where public regard for pharmacy as a profession has risen higher. I want to quote for you from a little leaflet which I understand has been placed, not once but many times, into every home in Birmingham and environs. On the first page appears an emblem with the legend: "This Emblem Protects You." On

pages 2 and 3 under the heading "Ethical Pharmacy Shields You" the following statements are made:

"This slogan, adopted by the Birmingham Retail Druggists' Association, has a deep meaning for all who patronize the Pharmacist, whether it be for the specific purpose of having a prescription filled or for any other reason.

"Recognizing that Pharmacy is a public service, each member of the B. R. D. A. is pledged always to conduct his business in a strictly ethical manner.

"To comply with all laws governing the practice of Pharmacy.

"To maintain a neat and sanitary store, paying close attention to his Prescription Department.

"To keep from his store all objectionable practices and persons.

"To hold the health and safety of his patrons as his first consideration.

"To compound each prescription entrusted to him with the utmost care, using only drugs or preparations of the highest quality, exactly in accordance with the instructions of the prescribing physician.

"Never to substitute one drug or preparation for another without first consulting with the prescribing physician.

"To refrain from the treatment of diseases, but in cases of emergency to render such assistance as he can, pending the arrival of the physician.

"Finally to make a just and reasonable charge for his services, being guided by the Golden Rule in all his dealings.

"The emblem of ethical pharmacy may be found on the window of every member of the Birmingham Retail Druggists' Association.

"Choose your druggist with the same care that you use in selecting your physician.

"Be safe. Look for the emblem first."

And then, on the last page of the leaflet, there appears the name and address of the individual pharmacy which distributes it.

I need not have chosen Birmingham for my example. In Memphis, the same sort of work is being ably done. In Asheville, the retail druggists have carried on a most impressive paid advertising campaign. In San Francisco, the local association has done likewise. Up in New England, through the intelligent efforts of a firm of wholesale druggists, 90 per cent of retail pharmacies display a sticker, and the clerks wear a celluloid button with the legend: "Protect your health. Buy your medicines at a registered pharmacy."

The secret behind each of the successful publicity campaigns which I have touched upon is the same—banding together, a group of pharmacists resolved to hold before the public eye the importance of pharmacy to the public. They have done it modestly, honestly and effectively. They have learned coöperation.

Now all this sort of activity is worthy of and has received the greatest approbation. When we come to the individual pharmacist, who is likewise entitled to publicity *when he does something to deserve it*, there is lacking the impressiveness of group action. Yet month in and month out our reporters discover drug stores in hamlets, towns and cities, which have found legitimate means of gaining publicity as a means of building business.

It would be very well if we might say to druggists: "Give over all your activities except the filling of prescriptions. Go back to ethical pharmacy and have done with the handling of miscellaneous merchandise which has turned your place into an emporium and a general store."

We have, it seems to me, to look upon the business of drug retailing from a

somewhat broader point of view than this. How many drug stores could survive if by waving a wand we should actually separate the sheep from the goats and the tares from the wheat? We know perfectly well that economically such a move would ruin three-fourths of them. That does not imply by any means that the ethical or professional side of the business should be ignored or slighted. Granted the general store aspect of many pharmacies, we can't blink the fact that other lines of business, carried on concurrently under the same roof, provide the only practical way we have yet been able to devise to bring pharmaceutical service to hundreds of communities. Therefore in considering publicity for drug stores, it is important that every side of the store's business be used to provide publicity, always remembering that some worth-while idea or accomplishment is a first necessity.

The Philadelphia druggist whose claim to public fame lies in the fact that he is an excellent band leader has lost none of his stature as a pharmacist thereby.

The druggist in the village of 5000 persons, Princeton, Ill., who equipped his store with air-conditioning units and thereby captured trade from the entire county is not sacrificing anything as a pharmacist.

The druggist in Pierre, South Dakota, who transformed his store by putting in a new front and fixtures and telling the whole town about it hasn't lost respectability. He has gained it.

The druggist in New York City whose window display always includes some pictures of New York of former generations hasn't driven away the physicians and their patients. They now have some *interest* in his store as opposed to those of his competitors.

The druggist in Fort Morgan, Colorado, who puts on an Easter egg race for children every year and then—are you horrified?—awards ice cream cones to winners right in his pharmacy, has lost no whit of his skill in filling prescriptions.

There are 14 druggists in the United States who are mayors of their towns or cities. They have not dragged the profession down, but have upraised it.

The druggist whose store is the meeting place for the Kiwanis Club is still faithful to his ideals as a pharmacist—more faithful than ever.

The druggist in a little town in New York State who has started a new national interest in vocational training, through his *own drug store*, in part—he is better equipped to deal with pharmacy than if he had engaged in no such activity.

Every one of these men has gained wide-spread publicity, beyond the confines of his own community. Each could be matched with a hundred others, known to the people in his town, respected by them, patronized by them for their strictly pharmaceutical needs—because having done one worth-while thing each capitalized on it, obtained legitimate publicity on it, let people know that here was a man who stands out a little from the crowd.

Publicity is a practical means of increasing business and a definite weapon in a competitive age. If druggists of to-day need anything, it is not to be told of the evils of merchandising, but it is to be better educated in merchandising practice. Given a clean store, an adequate personal preparation for his job, the pharmacist who uses publicity in furtherance of his business *and his profession* has proved himself a leader. As such he deserves not only applause, but wide-spread imitation.

ESTONIAN PHARMACY FORGES AHEAD.*

BY RUDOLF WALLNER.[1]

Since 1918, when Estonia won its independence from Russia, thanks to President Wilson's doctrine of self-determination of nations, pharmacists of this country have made a decided advance in the training of young pharmacists, in pharmaceutical administration, in organizing associations and founding pharmaceutical periodicals. The purpose of this paper shall be an attempt to outline briefly on historical background the nature of this advance in Estonian pharmacy.

The first law regulating the practice of pharmacy in Estonia dates from the year 1695, when this country was a part of the Kingdom of Sweden. This law was promulgated by the Council of the State of Tallinn (Reval), which since the Middle Ages, similar to other city-states of the Hanseatic League, was sort of a republic. The law in question was called *The Apothecaries Law and Uniform Scale of Prices ("Tax") of the Royal Dominion of Reval.* From this we learn that the council reserved for itself the right of inspecting the apothecary shops of the dominion, in presence of a physician. The law, however, provided that, in cases wherein the council did not deem its presence necessary, it could delegate the state physician to inspect and superintend the drug stores of the district. Incidentally among his other duties were to see that in Reval only the "physicians authorized by the Highly Commendable Collegio Medio Regio os Stockholm" were practicing, and that no apothecaries, surgeons, bathers and midwives were attempting to practice internal medicine nor were dispensing "purgations, vomitories, especially that of antimony, opiates, 'Mercurium Dulcem Precipitatum,' 'Turbit Minerale' and Corrosive Sublimate without incurring heavy penalties." This Swedish law was the first to originate the system of drug store concessions in the land, which has survived up to the present day, limiting the number of apothecary shops. (The present legal ratio is 1 to 6000.) As the title of the law implies, it provided at the same time a uniform scale of prices, worked out and periodically revised by the state authorities, on ingredients used and services performed in prescription work. This system of the uniform scale of prices—"The Apothecaries Tax"—has likewise survived up to now, and overcharge on prescriptions results in penalties. Among the minor provisions of the law worth mentioning are: Obligatory own manufacture of all preparations, including chemicals; to sell potent remedies only on physician's prescription and to store poisons in cabinets. It is obvious that the "pine boarders" of that day—the herbalists and pepperers—were strictly prohibited from selling medicaments on the ground that, as the law put it, "the pepperers would not understand the composition thereof, nor know how to prepare them."

When the country was conquered by the Muscovite Czar Peter, surnamed the Great, the drug business of the conquered provinces fell under the medical laws of the Russian Empire. The Russian laws relating to pharmacy, however, did not differ materially from those of Sweden. We know that Peter the Great devoted his life to Europeanization of his semi-barbaric country, and incidentally codified

* Section on Historical Pharmacy, A. PH. A., Portland meeting, 1936.

[1] Retail Pharmacist, Tallinn, Estonia. Formerly editor of *Pharmacia* and Head of the Department of Pharmacy in the Public Health Administration of Estonian Government.

the Russian laws on European models. For this purpose he called a number of collaborators from the West, and naturally the collaborators wrote in the law books of Russia the rules and regulations that were familiar to them. Thus, the only difference between the pharmacy law of the State of Reval and the Russian medical laws was in the manner of administration. According to these the drug stores of this vast empire of Peter were subject to the city and circuit physicians, and finally to that of the Medical Department of each province, under the management of a medical inspector. Each of these provincial medical departments was to have a *Learned Apothecary* (this provision was quite often overlooked), on whose shoulders was to fall the immediate supervision of drug stores, assaying of seized drugs and checking that the prescribed uniform scale of prices was not violated.

It is hardly necessary to repeat that the Russian medical laws held strictly to the system of drug store concessions and to the state uniform scale of prices. Not only that, but since the middle of the nineteenth century went so far as to dictate the number and kind of personnel that a store proprietor was to employ in his business, the kind of stock he was to carry and the manner in which the stock was to be stored and grouped, according to the potency of each drug and chemical. Finally, the Russian law directed certain definite store outlay and the kind of apparatus to maintain. It definitely prohibited sale of alcohol liquors and poisons without prescriptions.

When in the autumn of 1918 the German occupational forces, under the pressure of the victorious allies, had to leave Estonian soil, the newly established Estonian government soon created in the Ministry of the Interior the Public Health Administration or the office of the Chief Medical Inspector. The Public Health Administration was divided into two subdivisions: the Division of Medicine and the Division of Pharmacy with a pharmacist in charge. This division of the Public Health Administration into two independent administrative units was an important step toward pharmaceutical autonomy in Estonia. In the same year the first National Congress of Pharmacy declared that there be created an independent pharmacy administration with a director, vice-director and secretary. The memorandum of the resolution was placed in the hands of the government and action on it demanded. No action, however, was forthcoming. In 1919, the second National Congress of Pharmacy reiterated the demand of the first congress, but the results were again disappointing. As during the Russian régime, the city and county physicians remained the functionaries, under whose supervision the drug business of the country fell. Only one concession was given this time to pharmacists; the appointment of another pharmacist to the Public Health Administration, *viz.*, Pharmacy Inspector or Visitor.

Though so far the pharmacists' demands for independent pharmacy administration have fallen on deaf ears, pharmacists have not given up the struggle for autonomy. The ground for it has already been paved, inasmuch as during the last 16 years most of the Russian pharmacy laws have been either modified or annulled by the legislature.

Perhaps the most radical reform has taken place in pharmaceutical education. Under the Russian system, a young man, having finished his four-year course in a secondary school called *gymnasium*, could begin his study of pharmacy by entering

a drug store in the capacity of an apprentice and registering as such with the Public Health Administration. Having worked in this capacity for three years, the young man was authorized by law to take his assistant-pharmacist's examination at any of the state universities having medical schools. To pass this examination, the candidate had to demonstrate a definite practical and theoretical knowledge in pharmacy, chemistry and materia medica, as well as in posology and pharmaceutical Latin. (To be successful, he had to work a number of months with a tutor, who would drill him in theoretical subjects.) Having been successful, the new assistant had to register again with the Public Health Administration and practice another three years, before he was finally permitted to enter the university for his two-year pharmacy course. Having been successful in his studies, he received the diploma of a *provisor*, which gave him the right to manage a drug store, enter the civil service as a pharmacist or otherwise practice his profession. In Estonian pharmaceutical circles this system of training was considered inadequate. The prevailing argument was that the preliminary education of the Estonian pharmacist should be equal to that of physician. Accordingly, due to the pharmacists' demands, the Estonian legislature in 1919 passed a law whereby only the persons having the Certificate of Maturity, *i. e.*, having finished the full 7-year *gymnasium* course, could enter as apprentices in drug stores, and, after two years of practical experience, enter directly the University of Tartu, where the course of pharmacy was to be at least of 6-semester duration. Later, in 1926, the course of pharmacy at the University was increased to four years. In 1930, the preliminary practice requirement was changed to compulsory 2-year postgraduate practice.

Prior to the educational reforms there took place a decided activity in the formation of pharmaceutical associations. As the *Pharmaceutical Association of Estland*, which was established in 1897, grouped around itself only the German-speaking colleagues so, in 1917, there was organized the *Estonian Pharmaceutical Association* uniting all Estonian pharmacists, and placed itself in the forefront of pharmaceutical reforms. In 1921 was founded the *Society of Estonian Druggists*, which organized the drug store proprietors of all nationalities. Soon thereafter, in 1924, was established at the University of Tartu *The Academic Pharmaceutical Association*. This was followed by *The Estonian Association for Scientific Pharmacy*, in 1927, the *League of Estonian Pharmaceutical Associations* in 1929 and finally the *Union of Estonian Pharmacists*, in 1933.

The first Estonian pharmaceutical periodical, *Pharmacia*, was established in 1921 by the *Estonian Pharmaceutical Association*. By publishing regularly the work done at the Pharmacological Institute of Tartu University, it immediately began to attract attention in pharmaceutical circles abroad, and during the editorship of this writer was proud to list among its contributors such names as Professor Goris, Dr. Tschirch, Professor Thoms, Dr. Dragendorff, Dr. Utz and others. In 1926 was founded by the *Academical Pharmaceutical Association* another pharmaceutical monthly, *The Estonian Pharmacist* (*Eesti Rohuteadlane*), which became the mouthpiece of the younger generation of colleagues. This younger generation, it must be pointed out, has not taken part in any of the various reform movements, which the older generation of pharmacists has sponsored. In order to facilitate acquaintance with the foreign pharmaceutical literature, there was established, in 1930, at the *League of Estonian Pharmaceutical Associations* the

Pharmaceutical Library in Tallinn. A number of well-known foreign scientific institutions are sending regularly their scientific works to this library.

Besides raising the pharmaceutical education standards, establishing professional periodicals and founding a number of trade and professional associations, the pharmacists of Estonia have succeeded in many reforms of administrative and economic nature. Thus, in 1922, was promulgated the so-called *Law Relating to Operating of Drug Stores*, whereby the old Russian law permitting inheritable concessions in drug store ownership was changed to simple personal concession, by which the drug store ownership was made not inheritable. In 1933, the Estonian pharmacists were finally freed by the President's decree from under the supervision of city and county physicians. The result of this decree was that now the pharmacists of this country are responsible only to the Pharmacy Department of the Public Health Administration. In 1932 passed through the legislature the so-called "*Law Relating to Public Health Personnel*," which divided pharmaceutical personnel active in drug business into several categories, and described their rights and obligations. More details about this may be found in my paper on "*Ueber die pharmazeutische Fachbildung in Estland*," published in *Die Deutsche Apotheke*, 37, 1934.

At present the Estonian pharmacists are working at the task of getting a regular professor of Galenical pharmacy at Tartu University, where the teaching of that subject is not as satisfactory as it should be, calling together the Chamber of Pharmacy and establishing an independent pharmacy administration. What concerns the two former shall be realized in the near future, but as to the independent pharmacy administration, there is still much to do, inasmuch as the parties in the "seats of the mighty" do not seem to realize the necessity of it.

Yet, *per aspera ad astra!*

TRANSLATOR'S NOTE: The author of this paper, Rudolf Wallner, justly deserves the appellation "Father of Estonian Pharmacy" first applied to him by a Finnish colleague. As an editor, chief of Pharmacy Department of the Public Health Administration, and the founder and for many years the president of *The Estonian Association for Scientific Pharmacy*, he has played a more vital part in the development of pharmacy in Estonia than any other man. He modestly lists a number of improvements that have taken place in the pharmacy situation of his country during the past 16 years. But to a person familiar with the conditions of Estonian pharmacy, it is known that had not Mr. Wallner applied his tireless pen for the cause, and not used his gift of organization and his personal prestige, many of the reforms, most likely, would not have resulted. Higher educational requirements for pharmacy students, the periodical *Pharmacia* of high professional standing at home and abroad, an association for the advancement of scientific pharmacy and the revised pharmacy laws, strictly prohibiting drug vending outside of drug stores, are a few of the outstanding achievements of Mr. Wallner. Considering this, Mr. Wallner deserves more than a passing notice by American colleagues.

The beginning of Mr. Wallner's professional career is characteristic of all Estonian pharmacists of an "older" generation, the generation that began pharmacy studies during the last decades of Czarist régime, when Estonia still was part of the Russian Empire. He received his preliminary practical experience, as prescribed by Russian law, in the internationally known Dr. Poehl's Pharmacy in St. Petersburg, where, like in other large and excellent pharmacies of the Metropolis of Czars, there were practically limitless opportunities for thorough familiarity with all the phases of dispensing and manufacturing pharmacy, inasmuch as a considerable amount of prescription work (under the supervision of pharmacists) and all the manufacturing, not requiring physical labor, from lipsticks to sterilized ampuls, were done by students. Having finished his prescribed years of practice as student and assistant pharmacist, Mr. Wallner entered Tartu University Department

of Pharmacy, from which he was graduated with the diploma of *provisor*, giving rights and privileges equal to American registered pharmacists. Entering the retail field, he owned and managed a drug store of his own, devoting considerable time to botanical studies. When Estonia won its independence, Mr. Wallner was among the first to call together the *First National Pharmacists' Convention*, which he served as secretary. In 1919, we find him in Paris as a postgraduate student at *École Supérieure de Pharmacie de Paris*, working under Perrot, Goris, Weitz and Delepine. Notable from this period is his work on *Hydrastis Canadensis*, published in *Bulletin des Sciences Pharmacologique*. In 1921, he returned to Tallinn where he founded and edited the first Estonian pharmaceutical monthly *Pharmacia*. The following year the office of the Chief of Pharmacy Department of the Public Health Administration became vacant, and he was appointed to this post. This office Mr. Wallner held until 1934, retaining at the same time the editorship of *Pharmacia*, for which he secured as contributors such pharmacists of repute as Goris, Tschirch, Thoms, etc. As the result of his ability of organization there is *The Estonian Association for Scientific Pharmacy*, and very recently there was organized *The Estonian-Finnish-Hungarian Pharmaceutical League*, the purpose of the latter being to draw together the pharmacists of these three Finno-ugric peoples for the scientific and economic improvement of pharmacy in their respective countries.

Mr. Wallner's publications of scientific and professional nature are numerous, published in Estonian, French, German and Finnish pharmaceutical periodicals. Of his books deserving attention are the *Dictionary of Drugs in Colloquial Estonian and Manuale Pharmaceuticum*, in two volumes.

Since 1934, Mr. Wallner has somewhat withdrawn from public life, devoting most of his time to his prescription pharmacy and to writing.—O. L.

APOTHECARY SHOPS OF COLONIAL TIMES.

BY MILLICENT R. LAWALL.*

FOREWORD.

The following information has been gathered from various articles published in pharmaceutical literature and other sources of the past few years, with the idea of collecting in one article all the facts instead of having them scattered through many magazines and newspapers.

If you could step with me into an apothecary shop of Colonial times, having in mind a picture of the modern drug store, you would see a great contrast between the two in many ways. You would see many things to which you are unaccustomed, and miss many things to which you are accustomed. In the front of the shop you would see no large bulk windows of plate glass, with goods tastefully arranged. You would see only a flat window in most cases, flush with the house, and consisting of a number of small panes of glass, about 8 x 10 or 10 x 12 inches; about 24 panes in a window. There were no show bottles filled with colored water; they indicated that it was an apothecary shop by placing a bottle behind each pane—24 bottles in all; there were containers of colored liquid, to be sure, but they were the real thing. As there were no pharmaceutical manufacturing houses in those days, the pharmacist had to make his own preparations. He frequently grew his own plant drugs in his garden, and he made his tinctures by macerating the drugs in the proper menstruum in containers which were placed in the window, exposed to the rays of the sun—insolation it was called. When pharmaceutical

* Section on Historical Pharmacy, Portland meeting, 1935.

manufacturing houses came into being, this process was no longer necessary, and the colored show globes were substituted for the macerating drugs, and they are the evolution products of the time when the old-time apothecaries made their own preparations. You would see no lunch counter with its sandwiches, cake and ice cream; no soda fountain, for soda water had not yet been invented; no show cases as we know them to-day; no fancy candy boxes; no shelfware with glittering glass labels; you would find no beautiful torsion balance on the counter, but the old single-beam, equal arm scales with the huge brass pans suspended at the end of each arm, and if you went back into the prescription department, you would find no finely adjusted prescription balance, but most likely a small hand scale like the one in the old Glentworth store now in the Philadelphia College of Pharmacy and Science, the pans of which are made of tortoise shell suspended by cords from a beam of brass. There would be tobacco, but no cigars or cigarettes; no toothbrushes; in 1784 there were no toothbrushes in Philadelphia; those people who cleaned their teeth did it with a rag and powdered chalk or snuff; indeed, if a man cleaned his teeth he was considered effeminate.

There were no sugar-coated pills or tablets, and no capsules; people took their medicine "as is," in those days. The shelfware was as you see it now in museums—of pottery of different shapes and sizes. The syrups were kept in containers with spouts, which spouts, having no covers offered a fine opportunity for collecting entomologic specimens. There were cosmetics and perfumes, but the principal side-lines were paints, oils, varnishes, putty, window glass and garden seeds; also some fruits, such as figs, raisins and plums; no beautiful lighting fixtures. Betton's drug store in Philadelphia first showed Argand lamps in 1795, in which probably whale oil was burned. There were drugs a-plenty, in these old shops, both plant and mineral, but as for the great variety of other articles found in our stores to-day, there were none. Occasionally an old shop would be found in which the stock was an extraordinary jumble of everything, and only the apothecary himself could find anything in it.

Dr. T. W. Dyott of Philadelphia, in 1821, came the nearest to having a department store of any of the old shops. He was the largest distributor of "secret" medicines. He ran a wholesale and retail drug and family medicine house at the northeast corner of 2nd and Race Streets. He had the largest business in "panaceas" in the United States. The announcement of his remedies, and the certificates of his cures (testimonials) took up a daily half page in the *Aurora*, the *Democratic Press* and other newspapers. He had a fleet of Conestoga wagons carrying his medicines to suffering mankind in the south and west. He bought old bottles, lime and hardwood; he had a glass factory in Kensington where he made bottles; he handled garden seeds, paints, dyers' supplies, chemical and pharmaceutical apparatus, butter pots, snuff, chewing tobacco, mustard, chocolate, lard, ham, brandy, gin, sugar plums and cowskin whips.[1] He sold to the laboring poor at half the regular price.

He did not always carry in stock, but bartered for and dealt in, rosin, turpentine, lampblack, beeswax, cheese, rye whisky, apple whisky, peach brandy, pearlash, flaxseed, bristles, rags, logwood, mackerel and real estate. There is at the Philadelphia College of Pharmacy and Science, the old day book (waste book, it was called) of the old Christopher Marshall drug store dated 1774. The entries are in the fine meticulous handwriting of the period when people had time to write legibly, and nearly every other entry is for a sale of paints or oils, etc. This store had quite a large trade with the ships that came to the port of Philadelphia. Conditions on these ships must have been

[1] It is to be hoped Dr. Dyott knew enough to keep these various articles of merchandise separate from each other.

similar to those on our steamships to-day, where it seems to me that when a sailor has nothing else to do they give him a pot of paint and a brush and tell him to go and paint something. These ships were sailing ships, as indicated by their names, as for instance, the schooner Peggy, the sloop Hope, the ship Prosperity, the brig Nancy, the sloop Elizabeth; Capt. Long of the ship Success, the brig Morning Star.

The apothecary also seemed to be a friend in need, for there is one entry which reads: "John Dillhorn, £3 (3 pounds) lent him," and also another showing that he had lent some money to Dillhorn's wife. There is an echo of slavery in the entry: John Ross, 1 gal. boiled oil, delivered to his negro man. This store also sold drugs to the ships for their medicine chests.

The amounts were, of course, in English money, pounds, shillings and pence. Occasionally the dollar or half dollar was mentioned, but always followed by its equivalent in English money, as: "One dollar, 6.6." As mentioned before, the apothecary made his own preparations, and there being no drug millers then, he had to powder his drugs either by the use of mortars and pestles or in the crude hand mills then in existence. The mortars for powdering were usually of iron, and were called "contusion mortars." Sometimes the pestle would be nearly a yard long, so that the operator could stand upright, thus preventing an aching back. Sometimes the heavy mortar was mounted on a solid block of wood or on a post that passed through the floor and rested on the cellar floor. Sometimes a light, springy board was fastened by one end to one side of the ceiling, from where it passed across the ceiling, bringing the loose end over the mortar; this free end was then fastened to the pestle, and when the pestle was brought down on the material in the bottom of the mortar, and released, the spring of the board would help raise the pestle again, thus lessening the labor.

Commercial manufacturing really began when some proprietor of an apothecary shop made more of some preparation than he needed, and sold the surplus to his competitor. The old apothecaries also spread their own plasters, the small ones by hand. One of the specialties of the Marshall store was spread adhesive plasters. These were made in the open air, the cloth being drawn out by hand down Vidall Court to Second Street, all hands supporting the center with canes and broom handles, in lengths of about 60 or 75 yards, then cut into length of five yards and taken into the store. Later, Isaac P. Morris, one of the proprietors of the store, constructed a machine for spreading plasters, and after this the spread plaster was reeled on drums, and 150 or 200 yards could be made at one time.

In Colonial times, if a boy wanted to learn the drug business, his parents did not furnish the money to send him to a college of pharmacy, for there were none until 1821, but he was apprenticed to some well-known apothecary for a term of years, and he earned his knowledge by hard work, for the apprentice had to do the drudgery; the rules regarding apprentices were very strict; he had to live with his master's family; he was not allowed to go out nights without his master's permission, he was not allowed to marry without his master's permission, nor was he allowed to play cards, if it would cause any damage to his master's interests. It is safe to say that the drug business would not be overcrowded to-day if every pharmacy student had to conform to these regulations. The term of apprenticeship was from four to six years. There is one of these indentures at the Philadelphia College of Pharmacy and Science, dated 1782, and signed by Townsend Speakman, an apothecary, and an ancestor of Professor J. P. Remington. Probably the most laborious work the apprentices had to do was the powdering of drugs in the contusion mortar. Old Dr. Schwettmann, one of the proprietors of the Apothecaries' Hall in Charleston, S. C., said the pestle in the store where he served his apprenticeship, which was used in the contusion mortar for powdering, weighed 22 pounds.

The first drug mill was erected by Charles V. Hagner, in 1812 at the Falls of Schuylkill, Philadelphia. The first material ground in it was several tons of cream of tartar, which had been doubtfully entrusted to him by Dr. Haral, a Philadelphia druggist. Hagner had offered to do it for less than 3 cents a pound, which was the price charged for doing it by hand. Hagner hauled the material out to his mill by teams, and ground it on the millstones on which he ground his plasters and paints. The mill was run by water power. It is to be hoped he cleaned the stones well before he ground the cream of tartar. He returned the powder to the amazed and indignant druggist within 12 hours. Indignant, because he said the stuff was ruined, for it was not possible to do in 12 hours what it would have taken his men several months to do by hand. A meeting of druggists and experts was called, and the powder was examined and tested, and it was pronounced very good, unusually white and the finest powder they had ever seen. Hagner later, in 1820, erected another mill in Manayunk, and thus helped to build up that portion of the city.

So much for pharmacy in general in Colonial days. Now let us look at some of the individual shops.

The earliest record we have of an apothecary shop is in 1646, when William Davies, an apothecary of Boston asked permission to erect a picket fence around his property. This was probably the first store devoted exclusively to pharmacy in America. There is also an advertisement in the *South Carolina Gazette*, of 1734, in which John Lining of Charleston announces that he has certain medicinal preparations for sale, and he was evidently a pharmacist.

The oldest American apothecary shop still in existence and doing business is the Rau pharmacy in Bethlehem, Pa. During the first ten years of the existence of the town, the Moravians established a dispensary in one of the community houses on Church Street. From 1743 until 1750, it was in charge of Dr. Frederick Otto, and after that time his brother Dr. Matthew Otto was in charge. In 1752, a one-story stone dwelling and store was built for him at 420 Main Street. A frame second story was added in 1764. Dr. Otto's duties as a physician called him away from the store so much that a resident pharmacist was employed, Timothy Horsfeld, Jr., who acted in that capacity for 28 years—from 1761 until his death in 1789. In 1790 Dr. Eberhard Freytag then took charge, and in 1796 he bought the stock and fixtures from the Congregation, and carried on the business on his own account for 43 years, when he sold it to Simon Rau. The old building which had been built in 1752 was razed by Rau in 1862, and a larger and more convenient building erected on the same site. His brother, David Rau, was associated with him until his death in 1879. After that it was conducted by Eugene A. and Robert Rau, under the firm name of Simon Rau and Company. Robert Rau died in 1906, and C. N. Lochman purchased his share in the business. E. A. Rau retired in 1913, and was succeeded by F. P. Miller, who sold his part in the business to Robert A. Smith in 1930. The store was conducted by Lochman and Smith under the old name. Lochman died in 1930 and Smith became the sole owner. Paul Clarke then came in with Smith as registered pharmacist, still under the name of Simon Rau and Company. They are still carrying on in the same place and under the same name. Both are graduates of the Philadelphia College of Pharmacy and Science. There was quite an extensive botanical garden in the rear of the brethern house, and there the old apothecary cultivated his drugs. An occasional plant is still found growing in sheltered corners, having survived to this day. This store became famous for its beeswax Christmas candles, which are still manufactured and sent all over the country. They are made of beeswax because it burns with a smokeless flame. It is said that they are now mixed with bayberry wax, to give them the distinctive odor of bayberries. These candles were first manufactured in connection with the Christmas celebration of the Moravian Church.

This old store is said to contain enough pharmaceutical relics to start a museum. It is a pity that there is not in this country some fund or pharmaceutically in-

clined philanthropist, to preserve our old pharmaceutical relics. These things are done better in Europe, especially in Germany. When they have a particularly interesting old shop, it is put into a museum.

Another interesting old store, which has been turned over to a museum is Apothecaries' Hall in Charleston, S. C. The proprietor in 1781 was Dr. Andrew Turnbull, and it was founded prior to that time by somebody unknown. This was known as the Schwettmann Store, named after one of the well-known proprietors. Nothing in the shop is positively identified as coming from Dr. Turnbull's time, except the specimens of antique chairboard and cornice. The rest of the interior woodwork dates from the time of Dr. Jacob De LaMotta, 1816–1845, when the old shop was refitted in the pseudogothic style so popular in those times, and a specimen of which can be seen in the old Glentworth store, now in the Philadelphia College of Pharmacy and Science. Dr. John F. Huchting was one of the later proprietors, and he arranged for the transfer of the remaining material to the Charleston Museum, as a memorial to his former employer and friend, Frederick William Schwettmann. The shop is now set up in the balcony of the museum. One of the best known relics of the store is, however, missing. This is the famous old golden mortar and pestle, placed out in front of the store by Dr. De LaMotta in 1838, which was kept by Dr. Huchting when he moved from the old stand to a new location further up the street. This was known to the negroes of the city and the surrounding country as "The Big Yelluh Bucket."

A great variety of antique equipment is displayed, most of them English imports—crude drugs, mineral and plant, old labels, strings of dusty antique prescriptions, carboys, crucibles, gallipots, pincers for teeth-pulling and cups for bleeding. The following is taken from *The American Druggist:*

> "John Bennett, curator of the Museum, is perhaps best able to trace the history of the old shop from its opening day in 1740. 'It saw the last of the British crown,' he says, the King's Lieutenant-Governor, William Bull; Lord Cornwallis in his powdered wig, Balfour, Benjamin, Count Rumford, John Rutledge, Christopher Gadsen, the Pinckneys, Moultrie, Sumter, Marion, Gen. Nathaniel Green, President Washington and his nephew Will; Lafayette, Calhoun, the Hamptons, Robert E. Lee, and all the notable men of ante-bellum days. It has welcomed President Davis and watched President Taft ride by.' It has seen more history parade before its portals than probably any other shop in America; twice the store withstood sieges, once when the British bombarded the young Charleston, again when Federal shells crashed into the Confederate stronghold—one of them bursting in the shop itself. But perhaps its most novel thrill was a riot of superstitious ex-slaves, shortly after the Civil War, and was caused by nothing more than a toad in a jar of alcohol. It had been raining steadily in Charleston for a long time and the rumour spread that the rain was caused by a mermaid which the proprietor of the old store, Dr. Trott, had in captivity, and that it would not stop until the mermaid was released. So intense did the feeling become that a mob gathered. Stones were thrown through the windows, and finally the crowd pushed through the doors and ransacked the store, frantically searching for the cause of the trouble, and found a toad in a jar of alcohol. To this day there remains an old toad in its jar of alcohol, a mute reminder of the comic though dangerous occasion."

Another interesting old shop is the Heinitsch Pharmacy in Lancaster, which, however, was changed and remodeled in 1934. Members of the family are proud of the fact that the pharmacy has been in their possession for 147 years, and unlike many other old stores which were conducted under the names of different owners as time went on and the stores changed hands, the Heinitsch pharmacy has almost invariably had the Heinitsch name in the firm name; it has been a family affair, for when there was not a Heinitsch to run it, a relative of the family kept up the old tradition. First there was Carl Heinrich Heinitsch, the founder, who came from Leipzig, Germany, and settled in Lancaster, Pa., as a merchant; in 1780 he opened the drug store, in 1803, the firm name was August Heinitsch; in 1815, Heinitsch and Co.; in 1816, A. and J. F. Heinitsch; in 1841, J. F. Heinitsch and Son; in 1849, Charles Heinitsch, who in 1882 was President of the AMERICAN

PHARMACEUTICAL ASSOCIATION; in 1899, S. W. Heinitsch; in 1911, A. S. Heinitsch; in its later days it was under the management of E. L. Page, a relative of the family. Here in this store, among the relics, was the sheepskin of the founder, dated 1759 at Lutzen, Germany; a Bible written by hand in German script, and a copy of the first U. S. Pharmacopœia, called the Military Pharmacopœia, compiled by Dr. William Brown, for use in the Continental Army Hospital at Lititz, Pa. This, which is a second edition, is now in possession of the Philadelphia College of Pharmacy and Science, having been purchased from the Heinitsch estate. Only two other copies of this edition are in existence—one owned by the Pennsylvania Historical Society, the other one by some person unknown.

Probably the most interesting of the Colonial apothecary shops was the Mercer apothecary shop, kept by Dr. Hugh Mercer—the apothecary-patriot, as he was called at Fredericksburg, Va. Although no longer in business, this old store has been restored to its original condition, and is preserved as a museum. This shop was notable because of its connection with George Washington.

Dr. Hugh Mercer was born in Scotland, was educated in medicine in that country and came to America in the middle of the 18th century. He served in the French and Indian War, at which time the lifelong friendship between him and George Washington began. Probably because of this friendship, he came to Fredericksburg and opened an apothecary shop in 1764, and from 1764 to 1776 Washington spent a great deal of time in the store He had a desk here, at which he figured up his accounts and attended to his correspondence; in fact, he made this shop his headquarters in Fredericksburg. Other frequenters of the shop were Chief Justice John Marshall, who also had a desk there, Madison, Monroe, George Mason, Col. Fielding Lewis, Washington's brother-in-law, and many others, who congregated there to discuss pre-Revolutionary events. When war finally came Dr. Mercer again joined the Continental Army, was made a brigadier-general, and led the van of Washington's troops on the march from Princeton to Trenton, where he was mortally wounded, died and was buried in Philadelphia in January 1777, with military honors. He was first buried in the churchyard of historic Christ Church, but his body was later removed to Laurel Hill Cemetery. Not far from the old Mercer House, Congress erected a monument with the inscription "Sacred to the Memory of Hugh Mercer, who died bravely defending the liberties of America."

Dr. Mercer's house in Fredericksburg had two rooms in front, one of which was his consulting room where he blistered and bled his patients and prescribed for them, and the other was the apothecary shop where he prepared his medicines and filled his prescriptions, for the doctor was his own apothecary. At the rear of the house was his herb garden, where he grew many of his drugs. Back of the consulting room was the small room containing Washington's desk where he spent so many hours. After Dr. Mercer's death, the little house was used as a dwelling, and gradually deteriorated, until in 1928 it was taken over by the Citizen's Guild of Washington's Boyhood Home, and has been faithfully restored to a typical apothecary shop of the Colonial period. In the course of the restoration of the shop part, the drawers and shelves, with pigeon holes and niches to hold containers of varying shapes and sizes, were found intact, having been lathed and plastered over by a later occupant. To-day they are completely equipped like an 18th century pharmacy, with pill rollers, cork pressers, mortars and pestles, brass scales and huge green glass liquor containers. There are brandy, rum and whisky containers of cherry-red porcelain, banded with white. Some of the articles on display were the personal property of Dr. Mercer, including his rosewood, ivory-tipped carrying case, each tiny bottle with its label, faded but still legible.

An interesting feature of the house was the powder closet. This was a closet on the second floor, in the door of which, near the top a round hole was cut, large enough to admit a man's head.

Here the men came and thrust their bewigged heads through the hole to have them powdered, so that the powder would not get on their clothes. This was probably the first men's beauty shop in the country.

Another interesting shop, famous also for its connection with the Washington family, is the Leadbeater Store at Alexandria, Va. The following account of it is taken from the JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION for November 1934.

In 1792, young Edward Stabler borrowed 120 pounds from his uncle to buy stock and fixtures for an apothecary shop which he wanted to open in Alexandria. He did not then know

that he was starting a business that would be carried on by his descendants for 141 years. The business prospered so that he was able to return the loan and double his stock within a year. The original bill for stock came from Townsend Speakman, in Philadelphia, an ancestor of Prof. J. P. Remington. There were 150 items on it. Three of these articles are still in existence—two heavy marble mortars, and a quart flint glass bottle labeled "Spt. Nitre." This bottle was in continued use since the founding of the store until 1933, when the doors were closed after the last customer and the store no longer functioned as an apothecary shop. Washington was a frequent visitor here; he bought his medical supplies here, and after his death, his family continued to deal with Mr. Stabler. There were a number of documents in this store in the handwriting of members of the Washington family, and it is a pity they were not preserved, but they were handed to different people and scattered. One reads as follows:

> "Respected Friend. Here is a check for 77.9, the amount of your account, which ought much sooner to have been attended to. I will thank you to send it to me more frequently, at least once a year.
>
> Respectfully,
> Bush. Washington."

Judge Bushrod Washingon was a nephew of George.

An example of the leisurely way in which things were done in those days, is the correspondence between Mr. Stabler and the London firm of Allen and Howard. In a letter dated 1801, Mr. Stabler ordered:

> "One medicine chest, complete with weights, scales, bolus knives, etc. I want this to be of mahogany of good quality, as it is for the granddaughter of the widow of Gen. Washington, the cost to be about 12 guineas." It was not until the following year that the London firm billed the apothecary for a mahogany, folding-door medicine chest, complete, at 11 pounds, 11 shillings and shipped it on the sailing vessel Union, Thomas Woodhouse, Master. The name of a grandnephew of George Washington was found scrawled on one of the interior walls of the vault, and several of this generation owed their business training to a boyhood connection with this store; two of these nephews are now druggists in West Virginia.
>
> Half a century or more passed between the days when the first President chatted with Edward Stabler, the founder, and a later day when another great general, Robert E. Lee, came to the store to discuss passing events with Edward Stabler Leadbeater, the grandson of the founder. One of these talks was abruptly interrupted one day by a messenger, afterward identified as J. E. B. Stuart, later leader of cavalry under Lee in the Civil War, who came with the news of the raid on Harper's Ferry, and the order that Lee was to go and quell the insurrection. Lee was at that time an officer in the Union Army.
>
> Mr. Leadbeater was unwilling to take oath of allegiance to the United States. His sympathies were with the South, but his religious scruples prevented him from joining the Southern Army, and he could not submit to the edict that those business houses whose clerks did not take the oath, must close. But Mr. Lewis Mackenzie, a Union adherent and Justice of the Peace, declared that he would not trust anybody to put up his prescriptions but Ned Leadbeater, and oath or no oath the store must not be closed; and it was not closed.
>
> In the rear of the store is a large desk, and set in on each side is a mirror, one bearing in gold leaf the figures or date "1792," and the other "1892," thus indicating a century of service. Above these mirrors, in gold leaf are the various names under which the business was conducted until 1865, as follows:
>
> 1792, Edward Stabler
> 1820, E. Stabler and Son
> 1831, Wm. Stabler
> 1840, Wm. Stabler and Co.
> 1844, Wm. Stabler and Bro.

1852, John Leadbeater
1857, Leadbeater and Son
1860, Leadbeater and Co.

The following names should be added:

1892, E. S. Leadbeater and Sons
1903, Leadbeater and Sons, Inc.
1916, Leadbeater Drug Corporation.

There is a plate on the front of the desk in honor of Robert E. Lee. There are two plaster casts on top of the desk, one at each end, of George Washington and Benjamin Franklin. A story is told of a small boy, who on being asked whom these busts represented, quickly replied: "Why, George and Martha Washington, of course." Those of you who have seen some of the pictures and casts of Franklin, can excuse the boy, for they do look rather like a placid old lady.

The interior and exterior of the building is now being restored by the Landmark Society of Alexandria, and will be kept open as a museum, the first floor as a memorial to General Lee, and on the second floor the old apothecary shop will be set up.

Now let us go back to Philadelphia, the home of so many "firsts," and of so many of the leaders in pharmacy at that time. There were upward of twenty apothecary shops in Philadelphia in Colonial days, but none of them had the reputation or held the position that Christopher Marshall's did.

"Christopher Marshall was born in Dublin, Ireland, in 1709. He came to this country and was for some years a resident of Bucks Co., Pa., and was a member of the Middletown Meeting of the Friends or Quakers. Later he came to Philadelphia and established himself in the drug business in 1729, at Front and Chestnut Streets. In 1735 he purchased a property on the south side of Chestnut Street, east of Second Street, present number 214, where he continued the business. He was a Friend, and while his principles forbade it, he favored the cause of the colonists. With other militant Friends he seceded from the Society, to build and support the Free Quaker Meeting House, still standing at the corner of Fifth and Arch Streets. He was a remarkable man in his day and occupied many positions of trust in the infant city. He was known as the 'Fighting Quaker of the Revolution,' and was an active member of the Committee of Inspection and Safety of Philadelphia. His 'Remembrancer' or Diary of the Revolution is one of the most interesting and important records of the War for independence. His two sons, Christopher, Jr., and Charles, became his partners in 1765, and succeeded to the business, and Charles later became the manager.

"Charles Marshall was an apothecary, druggist, botanist and chemist. His shop had the reputation among the doctors as a place where they could get pure drugs, good service and have their prescriptions carefully and properly compounded. He worked in his laboratory with knowledge and skill. He always had from 6 to 12 alert, capable young men working in the front of the store, and in the back room, making preparations and filling prescriptions.

"Many of the city's most notable apothecaries were trained in this store, including Charles Ellis, who later bought the store, Dillwyn Parrish, who later had a store at 8th and Arch Streets, and was one of the presidents of the Philadelphia College of Pharmacy, and the first president of Haverford College; Frederick Brown, the originator of Brown's Jamaica Ginger, and who went into business for himself at the northeast corner of 5th and Chestnut Streets. He was one of the founders of the Philadelphia College of Apothecaries, as was Charles Marshall, who was the first president of that venerable institution. Charles Marshall withdrew from active participation in the business in 1801, but unfortunately retained an interest in it, and when in 1804, the firm became insolvent, through endorsing a note, everybody connected with it was involved in bankruptcy."

Enter now Elizabeth Marshall, or "Betsey," as she was called, who became business man-

ager, and pulled the business out "of the red," and put it on a sound financial basis. She was probably the first woman pharmacist. She continued to manage it until 1825, when the store was sold to Charles Ellis and Isaac P. Morris. The Marshalls were probably the first to manufacture chemicals. As early as 1786 they made muriate of ammonia in their laboratory on North Third Street. They also manufactured Glauber's Salt, the first manufacturer of this in the country, but it is safe to say that they did not take advantage of the gullibility of the public by selling it under a coined name at a high price.

Another important pharmacy of this period was that of John Speakman, at the Southwest corner of Second and Market Streets. This shop was especially notable because it was in a room on the second story over this shop that one of Philadelphia's most famous scientific institutions was born—The Academy of Natural Sciences, now at 19th and Race Streets. John Speakman and five associates organized the Academy on January 25, 1812. One of the associates was Gerard Troost, the first professor of chemistry at the College.

John Bartram, son of old John Bartram, the famous botanist, had an apothecary shop at 2nd and Arch Streets, and his brother Isaac had one on Arch Street. One may wonder why these important stores were established so far from what is now the business center of the city. The principal reason is that this section *was* then the business center of the city. Dr. Arny, in speaking of Philadelphia in 1821, says that Philadelphia was then the most important city in the United States; it had 137,000 inhabitants; New York ranked second. Southwark seemed to be the southern edge of the city. In 1826, Edward Needles, then in business at 12th and Race Streets, was called "the frontier apothecary, since across the street was a large field enclosed by a rail fence, and in 1829, when Biddle opened a store at 11th and Arch Streets, he was afraid he had made a mistake in going so far out into the suburbs. Most all of these old shops had special names usually exemplified in their signs. Among these were The Golden Ball (the Marshall Store); there was a Golden Mortar, and The Golden Spectacles was at Second Street between Black Horse Alley and Market Street. This was also the time when corn-meal mush was considered to be a delectable dish. An advertisement in a newspaper of the day states that a certain restaurant would serve corn-meal mush every Saturday night.

Four generations of Wetherills were druggists in Philadelphia. Samuel, the founder, was a Quaker of such prominence that the most eminent people of his day were attracted to him. Samuel, Jr., was the first manufacturer of chemicals on a large scale in the United States. The drug store was at 65 N. Front Street, in 1789. Samuel was succeeded in the drug business by Samuel, Jr., and John Price Wetherill, a grandson of the founder, succeeded his father.

The store of George Glentworth was opened in 1812, at the southeast corner of Sassafras (now Race) Street and Chester Street. Glentworth was one of the founders of the Philadelphia College, and his certificate of membership in the "Philadelphia College of Apothecaries," probably the only one in existence now, is in possession of the College. The family conducted this store for over 92 years without making any change in the arrangement or fixtures. It was then given to the College, and part of it is now set up in the building in a room on the second floor, much as it was in the old days. There are the old heavy brass counter scales, and the small tortoise shell hand prescription scales. Over the prescription case there was a figure of an owl, cut out of a flat board, with movable glass eyes, and a movable beak. These movable parts were attached to a string which ran down behind the counter, and could be worked by the clerk for the amusement of the children who came into the store. Underneath the counter was a bunk where the apprentice slept so he could answer the night bell.

Sometime ago there was published in a Philadelphia paper, an account of Mrs. Bok having found in the effects of her father, Mr. C. H. K. Curtis, the front of an old clock, and what interested her about it was a picture on it of an old drug store formerly at 6th and Chestnut Streets, the site of the present Ledger building. This was the store of Elias Durand, a young Frenchman who worked in a chemist's shop in France, and who was appointed a pharmaceutical aide in Napoleon's army. He served in the hundred days' campaign, came to America in 1816 and in 1825 opened this store. He imported his stock and fixtures from France. The store had mahogany drawers and marble counters and was quite the most magnificent store in the city at that time. He was a member of the Academy of Natural Sciences, and a vice-president of the College. In this store he introduced into America the business of bottling mineral waters. He wrote a series of magazine articles, mostly on pharmaceutical subjects. One of the most interesting of these was the story

of F. A. Michaux, the famous French botanist, for whom the Michaux Oak Grove in Fairmount Park is named. Durand collected a great number of herbs and plants, over 100,000 specimens, which he shipped to France. He died in 1873 at his Broad Street home in Philadelphia.

Another prominent apothecary of Philadelphia was James Cutbush. A Lyceum was built in 1812 at Chester and Race Streets opposite Glentworth's store, and Cutbush, an apothecary at 25 S. 4th Street, gave lectures here on chemistry, pharmacy and mineralogy, and demonstrations of laughing gas. Cutbush was made an assistant apothecary-general in 1814, and continued until 1820 (living in Philadelphia all the time), in which year he became professor of Chemistry at West Point.

The first free dispensary for the sick poor was established in Philadelphia in 1786, and was called the Philadelphia Dispensary. In 1922 it was merged with the Pennsylvania Hospital at 8th and Spruce Sts. The Pennsylvania Hospital had a contract with the Continental Army for the use of its "elaboratory" for the purpose of preparing and compounding the medicines for its military hospitals in 1768. The elaboratory was seized and used by the British Army during its occupation of Philadelphia.

This review of Continental pharmacy would not be complete without mention of Dr. Andrew Craigie, the first Apothecary-General of the United States. In 1775, the Congress of the Massachusetts Colony appointed him medical commissary and apothecary to the army raised by that Congress for the defense of the Colony. In 1777, the Medical Committee of the Continental Congress recommended a reorganization of the medical department, February 27th. It provided for the office of Apothecary-General, and authorized this office to appoint three assistant apothecaries in different parts of the United States. The Apothecary-General's income was fixed at three shillings a day, with six shillings a day for rations. Dr. Craigie was the first appointee to this office. Dr. Wilbert gives the following interesting account of Dr. Craigie. "He purchased the Vassall estate in Cambridge, of 150 acres. All visitors to Cambridge are familiar with this dignified English style country house. For years it was known as the Craigie House; now it is known as the Craigie-Longfellow House. This mansion has more historic interest than any other house in New England, and with the exception of Mt. Vernon, is the best known residence in the country. Mrs. Washington visited there while Washington made it his headquarters. She traveled with four black horses and postillions and servants in scarlet livery. Dr. Craigie gave magnificent entertainments there. He had a greenhouse and an icehouse on the premises. Some thought that a judgment would come upon one who would thus attempt to thwart nature and the designs of Providence by raising flowers in winter and keeping ice underground to cool the heat of summer. He was instrumental in having the bridge called Craigie or Canal Bridge built, from Lechmere Point to Boston. This bridge is said to have been the inspiration of Longfellow's poem:

"I stood on the bridge at midnight,
As the clocks were striking the hour."

. Craigie died in 1819 at the age of 76, poor and friendless.

A figure of prominence in medical and pharmaceutical circles in Colonial Philadelphia was Dr. John Morgan. He was graduated from the College of Philadelphia (founded by Franklin about the middle of the 18th century), receiving his college degree and then, in 1760, went to Europe to complete his medical education. He studied in London, Edinburgh and Paris, and returned to America and founded the first medical school attached to any college or university in this country—the

Medical School of the College of Philadelphia. The Medical Department of the University of Pennsylvania was established in 1779, and in 1791 these two medical schools, by act of the Pennsylvania Legislature, were united under the University of Pennsylvania.

Morgan was an earnest advocate of the separation of medicine and pharmacy as two distinct callings. While in Europe he wrote: "I am now preparing for America to see whether, after fourteen years' devotion to medicine, I can get my living without turning apothecary or practitioner of surgery. In an address delivered at the Commencement at the College of Philadelphia, May 30, 1765, he also said:

> "We must regret that the very different employment of physician, surgeon and apothecary should be promiscuously followed by any one man. They certainly require very different talents.
>
> "The business of pharmacy is essentially different from either, free from the cares of both; the apothecary is to prepare and compound medicines as the physician shall direct. Altogether engaged in this, by length of time, he attains to that skill therein which he could never have arrived at were his attention distracted by a variety of other subjects.
>
> "The wisdom of ages approved by experience, the most certain test of knowledge has taught us the necessity and utility of appointing different persons for these different employments, and accordingly we find them prosecuted separately in every wise and polished country.
>
> "The paying of a physician for attendance and the apothecary for his medicines apart, is certainly the most eligible mode of practice, both to the patient and practitioner. The apothecary then, who is not obliged to spend his time in visiting patients, can afford to make up medicines at a reasonable price, and it is as desirable as just in itself that patients should allow fees for attendance--whatever it may be thought to deserve.
>
> "They ought to know what it is they really pay for their medicine and what for medical advice and attendance."

Morgan's recommendations, however, did not meet the approval of his contemporaries. The drug store, when it existed at all, was only a warehouse from which the physician might obtain his supplies. Not until Dr. Abraham Chovet came to the city from Jamaica, was there one in town who would adopt the plan of writing prescriptions for his patients. Dr. John Jones followed, and by the end of the 18th century the custom was rather general, not only in Philadelphia, but in the other cities of the colonies. The apothecary thus came to occupy his own separate place in the community, and though as yet a man of no great standing, in such a manner were the foundations of pharmacy established.

Dr. Morgan was one of the founders of the first medical society in the province—the Philadelphia Medical Society, organized February 4, 1765. He was undoubtedly the first teacher of the theory and practice of medicine, materia medica, pharmacy and pharmaceutical chemistry in the country. He was the second apothecary at the Pennsylvania Hospital. He also had another title to fame. He was the first man in Philadelphia to carry a silk umbrella. Two of his friends, Parson Duché and Dr. Chancellor, presently joined him in the "outlandish" custom. An old account says, "they were bawled out and razzed as they walked along High Street." Even polite society poked fun at them, but they persevered, and every

time it rained, more came in out of the wet under the "new-fangled and effeminate contraption."

What incensed the Tories of that day more than anything else was the fact that Dr. Morgan, contrary to the old customs, neither carried nor compounded his own medicines. He actually had the chemist make his pills and mix his potions. And what medicines there were in those days. Most of the popular herb lore came from the Indians. Goldenrod was the specific for dysentery. Alder buds and dittany purified the blood. Boneset was the sure cure for consumption. People could understand dosage with black, horrible concoctions, but anatomy, such as Dr. Morgan and Dr. Shippen practiced, was a devilish thing. A building on North Third Street, over the Cohocksink Creek, was professedly a place for boiling oil and making hartshorn. But the town gossips and rumour mongers knew better, and told a great deal more than they knew. The neighborhood was shunned by all pedestrians at night. The grave robbers deposited their gruesome burdens there under cover of darkness, and when, two weeks later, black smoke poured from the chimneys, it was Drs. Morgan and Shippen at their nefarious work.

The soda fountain being one of the principal assets of the modern drug store, it might be interesting to know how soda water came to be. It was invented by the Rev. J. B. Priestley, the discoverer of oxygen. While preaching in a chapel at Leeds in England, he lived near a brewery, and became interested, as a chemist, in the possibility of utilizing the gas that came from the vats. He also experimented on the solubility of carbon dioxide in water. A Philadelphia physician, Dr. Philip Syng Physick, became interested in Priestley's experiments, and asked a Philadelphia pharmacist, Townsend Speakman, to prepare carbonated water for his patients. Speakman, to make the water more palatable, added fruit juices, and thus was born the popular American drink, in 1807.

Dr. Edgar Fahs Smith said "The first soda water was dispensed regularly to patients from fountains at $1.50 per month, for one glass a day."

It is interesting to know that Benedict Arnold, the Revolutionary traitor, once kept a combined drug and book shop at New Haven, Conn., in 1762. The sign read "Benedict Arnold, Drugs and Books. *Non sibi sed toteque.*"

Pharmacy can well be proud of its heritage of its "fathers of old." They were, as a rule, staunch old gentlemen, skilled in their craft, patriotic, interested in education and science and an honor to their profession.

"None so learned, but nobly bold;
Excellent hearts had our fathers of old."

A "MEDICAL CITY" NEAR STOCKHOLM.

A complete "medical city" is being constructed near Stockholm by the Swedish government. It will cost $10,000,000.00 and will include the latest hospital equipment as developed in all parts of the world.

The main building will be H-shaped, with a roof for sun bathing, and will be seven stories high. It will contain operating theaters, lecture halls, wards and laboratories.

In addition there will be a children's hospital, a building for psychiatric diseases, a rheumatism clinic, swimming pool, football grounds, tennis courts, church, concert halls and homes for staff doctors, students and nurses.

Plans for the project were originated in 1931 and work on roads and excavations started in 1932. The foundation stone for a special clinic on cancer has been laid by King Gustav.

THE DEPARTMENT OF THE AMERICAN ASSOCIATION OF COLLEGES OF PHARMACY

C. B. JORDAN—CHAIRMAN OF EXECUTIVE COMMITTEE, A. A. C. P., EDITOR OF THIS DEPARTMENT.

COMPLEXITY OF COLLEGE LIFE.

BY C. B. JORDAN.

Time was when the student considered himself fortunate if allowed to sit at the feet of the instructor and he asked nothing of the instructor except that which he cared to give voluntarily. The educational institution of the early day felt little or no responsibility for the student. He could come and go as he saw fit. If he was successful in passing a course, he received credit for the same; if not successful, he tried it again or made no other effort to secure the credit.

The instructor was all important and almost infallible as far as the knowledge of the subject was concerned. There was little or no tendency to question the views of the instructor nor the statements of the textbook from which he taught. The teacher was held in high esteem and shown every courtesy.

Going to college was a real event, not only in the life of the student but also in the lives of the members of his family and of the community in which he lived, because few were fortunate enough to have such an opportunity. Usually only those who were very desirous of an education made the effort necessary to secure one. The student came to college with a determination to succeed. In other words, only the selective few, deeply interested in education, came to college.

In contrast to these conditions, we now have hoards of students entering our colleges, many because they have a real desire to secure an education but also many because it is "the thing to do" and because a college education will assist in securing a white-collared job. We do not receive a selected list of students to-day, but all, good and bad, bright and dull, interested and uninterested, ambitious and lazy, all are passed into the hopper of the educational mill and all, or nearly all, hope to come out at the other end as fine, white flour of collegiate grade, ready and competent to accept the lucrative white-collared job that will be awaiting them.

The attitude of the student and of his parent toward our educational institutions has changed. No longer is it that, "We hope Johnny will be capable of taking an educational training with good advantage to himself and his alma mater," but instead the attitude is, "We expect you to give Johnny an education that will make it possible for him, regardless of his interest and ability, to go out and conquer the world at a salary of from $4000.00 to $6000.00 a year." "If you fail my boy, there is something wrong with you." "You do not make your courses interesting enough for him or you expect too much of a boy who must have his fun in college." "You, his teachers, are to blame." "Johnny was always a good student in high school and what has happened between high school and college?"

I fully realize that the conditions I have described do not apply to all of our college students, but I do maintain that it applies to too many of them. How often do we find students saying that they would go to class regularly if the instructor were a good one and presented his material in an attractive and interesting way. The surprising thing is that it is usually the poor student who has difficulty in main-

taining himself that complains of boredom in classes, while the good student, the one that naturally would be bored by an uninteresting instructor, does not complain. There are good and poor instructors and some that never should have been employed, but the poor ones are few in number and are usually weeded out early in their service. Therefore, the charge that the instructor is to blame is rarely true and it seems that we are receiving more and more students that expect the college to give them an education. The waste from our educational mill speaks volumes regarding the misfits that hopefully enter the hopper.

What are the colleges doing to correct this condition and to avoid this wasteful process? Surely the college owes an obligation to the citizens of the state and an even greater one to the boys and girls that matriculate. Is the college doing all that it can to save every one of these young people that it is possible to save and to turn out into the world graduates that will be a credit to themselves, to their state and to their college? If not, then the college is failing to fulfil its mission and is unworthy of the support that the state gives to it. Let us examine some of the activities of our colleges, indicating that they are alive to this serious situation.

a. *Entrance Requirements.*—These requirements are made just for the purpose of preventing or reducing such waste to the minimum. However, if the college is a state institution and an integral part of the public instruction of the state, it is almost compelled to accept *every* graduate of a commissioned high school that meets their requirements, regardless of whether the student is at the head or the foot of his graduating class and, unfortunately, the student at the foot of the class is often the one who decides to go to college and frequently the one who selects the most difficult course in college. It then becomes the duty of the college to give such a student as much guidance as possible.

b. *Orientation.*—Nearly every college gives orientation tests for the purpose of securing information that will assist the faculty in guiding the student. These tests are not infallible but they are very good indicators of what the student is able to do. If he is in the lower tenth of the entering class, the college is safe in assuming that he will have grave difficulty in carrying his work. If he is in the upper quarter of the entering class, he should carry his work with little or no difficulty. The latter student does not fail because of poor mental ability but may fail because of ill-health, lack of ambition, lack of interest in his work or some similar reason. It is the duty of the college to determine why such a student is failing and correct the fault or advise the student to leave college. The student in the lower tenth of his class presents a much more difficult problem, especially if he be a determined, hard-working student. The college cannot say to him, "You will fail," because that may be the most disastrous thing that could happen to him. Instead, the college must guide him as best it can and point the way to a successful life without a college education. In the case of the broad middle group of the class, most of them who are ambitious and willing to work will be successful unless they are enrolled in courses in which they are not interested. I know of no way of crushing a student's initiative that is more effective than that of forcing him into a curriculum in which he is not at all interested. Some pharmacists think that their sons or daughters should make good pharmacists because the parent is successful and force them to continue in the professional training long after it is obvious that they have no interest in it. This is a serious mistake. Such a student should be allowed to

choose his curriculum or be taken out of college until he has made up his mind as to what he is most interested in. Some of our happiest people are those who are doing a worth-while work in which they are interested and takde elight even though they have never graduated from college and are perhaps unknown outside of the small circle of those whose lives they touch.

c. *Student Health.*—It goes without contradiction that no one can be happy and successful if they are not healthy. Too often this important matter is neglected and students, either of their own will or that of their parents, continue in college to the permanent detriment to their health. Some students are ignorant of the fundamental laws of health and many of them are exceedingly careless in obeying these laws. It then becomes the duty of the college to give health information and to emphasize the importance of obeying health laws. The desire to graduate with their class or to enter on their life's work as early as possible will sometimes cause students to ruin their health. It is the duty of the college to look after the health of the student body, not only for the purpose of preventing some from ruining their health, but also to protect the students from contagious diseases and to keep all in a healthy condition. Any college that fails to make provision for the necessary instruction in health matters and to take care of its students who are ill is failing to do its full duty.

d. *Physical Exercise.*—Students are quite prone to forget the importance of physical exercise in the development of a healthy body. Therefore, the college should provide facilities and instruction and require participation in exercises that are necessary to proper health conditions. Again individuality comes in and the student who needs corrective exercises should be singled out and given the proper kind and amount.

e. *Personnel Service.*—It is fully recognized that no two students are the same in all respects and yet colleges are compelled, because of the great numbers, to group them in large classes and treat them all alike in the formal instruction of the class. This makes it necessary that some other mechanism be set up to handle the individual differences, especially those that are unusual. Here is the place for personnel work and every college should have trained personnel officers, one for the young men and another for the young women. Where such formal handling of the problem is impossible, the whole staff of instructors should be very conscious of the needs of the individual student and make an energetic effort to give the student guidance even in private matters that often confront and confuse him. Whether there is a formal mechanism for handling such matters or not, the good instructor will invite confidence and will feel it a duty to give needed guidance. If this is not done, the college is missing an opportunity for instruction that is often more important to the student than any course he may pursue.

f. *Extra-curricular Activities.*—Every college should offer opportunities for extra-curricular activities, such as athletics, debating, literary societies, dramatics, editorial work, etc. These activities are excellent and a great help in developing the "all-around" student. Some of the greatest benefits of college life come from just such activities. However, there is a great danger of the "side shows" being so attractive that the student looses sight of the "main tent." As in eating, a balanced ration, in this case, of curricular and extra-curricular activities is *most* important for the intellectual health of the student. The college must exercise sufficient con-

trol over these extra-curricular activities to prevent the student from too much indulgence. In some cases, no extra-curricular activity should be permitted and, in other cases, considerable participation should be allowed and, in certain cases, the student should be urged to participate. The good judgment of the Faculty should always be in evidence in giving proper control in these matters and here the college has a duty to perform that is sometimes quite as important as any other duty.

I think I have said enough to show that the modern college with its complex student life has duties never dreamed of in earlier years. Unfortunately, it costs money to provide the facilities and guidance required to-day but this is an important item in the budget of every well-ordered college and one that cannot afford to be eliminated. The colleges of pharmacy connected with large educational institutions are fortunate in that the parent organization provides many of these things, but this does not relieve the individual teacher of his responsibility to his students as far as guidance, counsel and kindly interest in them are concerned. The teacher of to-day must be more than an instructor in the class room. He must be a leader, inspiring, counseling, directing and enthusing his students, both collectively and individually.

THE CHANGING ATTITUDE OF GOVERNMENT TOWARD PROFESSIONAL PHARMACY.*

BY ARTHUR D. BAKER.[1]

The AMERICAN PHARMACEUTICAL ASSOCIATION as organized by pharmacists represents pharmacy as a profession rather than as a means of mass merchandising. It always has been the one drug association which placed its emphasis on the service rather than on the business side of selling of drugs. It is my purpose in this article to briefly discuss the various changes in governmental trends which have transpired during the years, and the underlying reasons behind these changes.

I believe most of us here can remember the time when it was difficult to obtain the passage in Congress and in various State legislatures of laws increasing the standards of the men supplying necessary drug needs of the various communities. As time went by the problem became somewhat easier, and then about fifteen years ago came the mass merchandising *era*, and the business methods adopted by various individuals and corporations in the drug profession temporarily brought about increased difficulties in presenting the professional aspects of pharmacy to our legislative bodies, our executives and our courts. Let me describe some of the methods which operated temporarily to bring our profession into disrepute, or at least caused the general public to regard the business of vending drugs with less respect.

Mass merchandising depends for its success upon price appeal to drug purchasers. It involves the removal of the personal element in dealing with the public. Shortly after its inception the manufacturers of widely known proprietaries and patent medicines instigated a policy of direct national advertising in magazines,

* Section on Education and Legislation, A. PH. A., Portland meeting, 1935.

[1] Secretary, Colorado Board of Pharmacy.

newspapers and by radio, intended to sell their product to the consumer not on the recommendation of the individual pharmacist as a professional man, but on the basis of competitive advertising. The amount of advertising depended not on the integral worth of the product advertised but on the financial condition of the advertiser and the gross profits derived from sales. This system of advertising the product direct to the consumer of necessity lessened the influence of the independent pharmacist in recommending what he considered worth-while products, and further, lessened the reliance of the consumer upon the judgment of the pharmacist.

A natural result of this system, because of its temporary success, was its imitation by the large pharmaceutical manufacturing houses of the country. Intensified detailing to the physicians of the products of these companies was instituted and was supplemented by advertising the products to the physicians by direct mail throughout the country. In addition, direct newspaper and magazine advertising to the consumer was begun, of the products detailed and advertised formerly *only* to the physician. All of us know the result which followed.

The prescribing of U. S. P. and N. F. preparations became less and less, and the particular proprietaries taking the place of the U. S. P. and the N. F. preparations, dependent more or less upon the last product detailed to the physicians. As a result it was a common experience for a pharmacist to stock a preparation prescribed once or twice by a physician, only to have the remainder left on his shelves through the ensuing years. Aside from the financial losses involved because of this system, again the independent pharmacist suffered a loss in reliance on the part of the consuming public.

A further pernicious result of this detailing and advertising system was the growth of self-medication on the part of the public. Physicians adopted the habit of trying out these detailed preparations on their patients by handing them the sample without destroying the label. They would tell the neighbors about the product and the neighbors would demand it in the pharmacy by name. Physicians have complained about the counter prescribing of the pharmacist, but it is my opinion that 90% of what they term counter prescribing is self-medication taught by the physicians themselves and through direct advertising to the general public.

Into the picture thus created by the changed system of the manufacturers entered the predatory members of our profession. If the manufacturer depends for the sale of his products upon a complete ignoring of the middle man, why should they not ignore the professional aspects of our business and carry on the retail trade along the same lines. Thus the chain store and the cut-rate store came into existence. The business of the individual independents was so far curtailed that they were unable to maintain the proper equipment and pharmaceutical stock for the professional side of their business. It came to the point where many of the registered pharmacists were really incompetent to handle the duties in the few remaining ethical pharmacies. Further lack of reliance in the neighborhood pharmacist was instilled in the minds of the public.

What effect did the above-described picture have on the attitude of the Government and its agencies toward professional pharmacy? Our law-makers, executives and judicial bodies are a part of the consuming public so far as we are concerned. The breakdown in the morale of our business, the attitude of the preda-

tory members of our profession, the direct appeal of the manufacturer to the consumer all had their effect upon the men exercising our governmental functions. As a result a barrier arose which was hard to break down when a public health measure relating to pharmacy was presented to these bodies. Looking at the chains and the cut-rate stores, the individuals representing our Government were unable to understand why pharmacy should be considered as a profession. It appeared to them, even though it might only be on the surface, that the drug business was in the same category as the grocery business, hardware business or any other retail business. I say even though on the surface because the general public does not often take the time to look below the surface. They are occupied with their own interests. In other words they became price-conscious.

A specific instance of this changed attitude became manifested in Colorado in 1933, when an assault on our college prerequisite law was launched. A bill was introduced suspending its operation for a period of two years, and in spite of the opposition of a great many pharmacists of the State it was passed by the General Assembly; fortunately, our Chief Executive, Governor Ed C. Johnson, realized that signing such a bill would be a most reactionary and backward step and vetoed it. Should any effort be made in other states to destroy our prerequisite laws it is my opinion that this ASSOCIATION should take a leading part in attempting to retain them.

Fortunately, I believe that the trend, which I have described, is again changing. The pendulum is swinging in the other direction. With the collapse of our economic structure in the past few years, the public is gradually becoming aware of the fact that the mass merchandising idea has deprived hundreds of thousands of our citizens of the opportunity of making a living. Individual businesses and professions are once again coming into their own. This great ASSOCIATION will have a large part in restoring professional pharmacy to its former high status. To accomplish this, however, the mistakes made in the past must be kept in mind. When the time comes that our colleges of pharmacy throughout this country equip their men with practical courses in commercial pharmacy rather than forcing them into the employ of our large pharmaceutical houses and the chain stores, we will know that we are back where we belong, operating our various businesses as service institutions for our various neighborhoods, and taking a just pride in our relationship with the public and our physicians.

DRAMATIZING CHEMICAL INDUSTRY.

Depicting the progress of chemical industry and dramatizing the part that the "invisible science" plays in every day life, 21 manufacturing divisions of the E. I. du Pont de Nemours & Co., Inc., will show their products and indicate the processes by which they are produced at the Eastern States Exposition in Springfield, Mass., from September 15th to 21st, inclusive.

The exhibit, "The March of Chemistry," will occupy 356 running feet in the Exposition's three-acre Industrial Arts Building and will be the largest single display ever presented at an annual exhibition. It will be of educational nature and will cover a wide range of chemical products, including several spectacular new developments of du Pont research laboratories, showing how they are made, how they are used and how they serve, often in an unseen way, the ultimate consumer.

Pharmaceutical manufacturing is depicted by dioramas in the Smithsonian Institution—see January JOURNAL A. PH. A., pages 40–46.

PROCEEDINGS OF THE LOCAL BRANCHES

"All papers presented to the Association and Branches shall become the property of the Association with the understanding that they are not to be published in any other publication prior to their publication in those of the Association, except with the consent of the Council." —Part of Chapter VI, Article VI of the By-Laws.

ARTICLE III of Chapter VII reads: "The objects and aims of local branches of this Association shall be the same as set forth in ARTICLE I of the Constitution of this body, *and the acts of local branches shall in no way commit or bind this Association, and can only serve as recommendations to it.* And no local branch shall enact any article of Constitution or By-Law to conflict with the Constitution or By-Laws of this Association."

ARTICLE IV of Chapter VII reads: "Each local branch having not less than 50 dues-paid members of the Association, holding not less than six meetings annually with an attendance of not less than 9 members at each meeting, and the proceedings of which shall have been submitted to the JOURNAL for publication, may elect one representative to the House of Delegates."

Reports of the meeting of the Local Branches shall be mailed to the Editor on the day following the meeting, if possible. Minutes should be typewritten with wide spaces between the lines. Care should be taken to give proper names correctly and manuscript should be signed by the reporter. *Please advise us of changes in Roster and mail reports promptly.*

BALTIMORE.

The regular monthly meeting of the Baltimore Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held on January 31st, at the Emerson Hotel, President William F. Reindollar calling the meeting to order. This being the last meeting of the year, reports from the several committees were presented and, after general discussion, were approved and accepted.

We are very much gratified that, after the embarrassing announcement in the December issue of the A. PH. A. JOURNAL of the possibility of having to dissolve the Baltimore Branch, the membership overwhelmed the committee to such an extent that by the votes received by mail and the sentiments voiced by those present, such an untimely disaster was prevented. Drs. Dunning, Swain, Lowrey, Kantner and others spoke at length upon the subject.

The report of the Nominating Committee was called for and the following were placed before the body for action: *President*, A. N. Hewing; *Vice-President*, Charles Austin; *Secretary-Treasurer*, Mrs. E. Grace Kahler; and were unanimously elected, by vote. After a few remarks by the incoming president, the meeting was closed.

The Branch held its February meeting at the Emerson Hotel on Thursday evening, the 20th. A dinner preceded the meeting and had as its guest, Rowland Jones, representative of the National Association of Retail Druggists of Washington, D. C.

After dinner and before the general evening session began, the presiding officer called on several for their general views and all were gratified to know that the Baltimore Branch was to continue.

The General Session called at 8:30 P.M. consisted of about 40, who had the pleasure of hearing Rowland Jones give a comprehensive talk on the bills which affect pharmacy and are now before Congress. Afterward there were a number of questions asked and very interesting information was afforded those present.

Prof. M. R. Thompson, Professor of Pharmacology of the School of Pharmacy, University of Maryland, spoke for a time on the Students' Auxiliary of the Maryland Pharmaceutical Association.

After a rising vote of thanks to Mr. Jones, he was compelled to leave before the meeting closed; *Secretary-Elect* Kahler asked to be excused from this duty, due to other connections, and Robert S. Fuqua, of the Pharmacy and Dispensing Division of the Johns Hopkins Hospital, was proposed and elected to serve for the year 1936.

No further business calling the attention of this body, the meeting adjourned with loud applause and a brighter outlook for the future.

FRANK L. BLACK, *Acting Secretary.*

CHICAGO.

The 235th meeting of the Chicago Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held Tuesday evening, February 18th, at the University of Illinois College of Pharmacy.

Dr. Jamieson, Director of Research, Eli Lilly Company, was the speaker of the evening, who chose as his subject "New Biologicals." He stated that the most activity in recent years has been in the field of viruses. The smallpox virus as produced on the calf is well known; there has been no improvement until the past few years. The calf virus has certain inherent disadvantages, such as occasional severe reactions, large scars many times formed as a result of the vaccination, post-vaccinal encephalitis and contamination with other viruses.

The work tended toward a virus free from these objections, particularly toward a vaccine virus free from other viruses. It was found that a sterile virus could be grown on embryonic tissue and that it could be produced aseptically and virile. There are two objections to embryonic growth of the virus in the test-tube, (1) Lack of stability and (2) Loss of virulence. The virus grown in this manner is not suitable for scarification, but would have to be administered intradermally. More information on results obtained from intradermal administration is needed.

It was found that the virus grew well on the embryonic membrane of the egg. The virus was passed through the shell of the egg into the fetal membrane and the small opening made was sealed with paraffin. The virus grows well and is of high potency. It was found that the individual responded well to this vaccination and that the virus was the same in all respects as that grown on the calf.

Some of the advantages of the egg grown virus are:

(1) Sterility.
(2) Egg has ability to destroy other bacteria.
(3) Produces a non-irritating virus with no metabolites or degradation products.
(4) Reaction is much milder, the scars very small.
(5) Immunity same as with the calf vaccine.

In order to have a successful take with this vaccine there must be a proliferation of cells at the point of vaccination. The vaccination must be done carefully and requires more punctures. The calf-grown virus sets up the local irritation that must be artifically produced when the egg-grown virus is used.

The success of the smallpox vaccine grown in the egg has led to attempts to growing other viruses in the same manner. Chicken pox virus was mentioned as having been successfully grown in this manner.

Poliomyelitis virus obtained by the use of convalescent serum has been of little value in the treatment of this disease and is considered of no more value than normal horse serum. Sodium ricinoleate and formaldehyde have been used to attenuate the virus with but little success.

Common cold and influenza viruses have been under intensive investigation with mediocre results. There are many strains of each and the immunity is generally short lived. There seems to be fewer strains of influenza virus than cold virus. The secondary invaders of common colds usually do more harm than the cold itself. Oral cold vaccination is accomplished by growing the virus, drying, incorporating in starch and placing into capsules for oral use. It is standardized as to bacterial count. This method of virus ingestion has led to a 70% reduction in colds with a series of test-cases involving 500 individuals. In these test cases it was noticed that the individuals having the most colds in a year, three to ten colds, received the greatest benefit.

The question of the feasibility of oral vaccination has received much discussion. If oral vaccination can be accomplished why do we not vaccinate ourselves during normal life? Dr. Arnold, of the University of Illinois College of Medicine, has answered this question quite satisfactorily by pointing out that organisms are not bile resistant. So, for oral vaccination the organism must be protected against the action of the bile and this is easily accomplished in the laboratory. The vaccine must be taken while the stomach is resting. Oral Cold Vaccine, Oral Typhoid Vaccine and Oral Typhoid Mixed are now available.

Pertussis vaccine has undergone much improvement in the last few years. Dr. Sauer used cultures recently isolated, grew them on human blood and used a greater bacterial count and a greater volume, about double that of most investigators. Kreuger used undenatured bacterial

antigens with the thought that denaturing vaccines were destroying the immunity-producing substances. Krueger accomplished this by mechanically disrupting the organism, thus producing greater solution of the bacterial protein. His vaccines are standardized as to protein content and not on bacterial count.

Diphtheria toxoid was formerly given in two doses, but by treating with alum the proteins are precipitated and now one dose is sufficient. Animal experiments show that the alum toxoid does not give as permanent an immunity, and experiments are under way on a large scale at the present time to attempt to answer this question.

Tetanus toxoid (Alum precipitated). It was recommended by Dr. Jamieson that the tetanus toxoid be given in two doses, a few months apart, and that an added dose be given at the time of injury.

Staphylococcus toxoid can produce a high type of immunity, but a large number of doses over some length of time is necessary.

Antitoxins and Serums.—The antitoxins have been improved by reducing the volume as much as 40%. Other refinements and improvements have been made. The protein content is reduced and the incidence of serum reactions has correspondingly decreased.

Pneumonia treatment has not been as successful. A better understanding of the makeup of the organisms is needed. Three antibodies are known. Dr. Jamieson suggested research on the products given off by the organisms rather than on the many types of pneumococcic organisms.

Dr. Jamieson concluded with the statement that much has been accomplished in the field discussed and that much still remains to be done.

The many questions asked of Dr. Jamieson after the conclusion of his talk testified to the interest taken by the audiences.

LAWRENCE TEMPLETON, *Secretary.*

NEW YORK.

The February meeting of the New York Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held in Columbia University, College of Pharmacy, 115 West 68th Street, New York City, on February 10th. About fifty members and their guests attended.

The meeting was called to order by President Schaefer. The minutes of the previous meeting were read and approved.

Chairman Lehman, of the Committee on Legislation and Education, presented the following report:

Federal Legislation: *National Fair Trade Act S. 3518*, introduced by Senator Radcliffe of Maryland for Senator Tydings, and sponsored by the N. A. R. D., amends the Sherman and Federal Trade Commission Acts so as to permit those engaged in interstate commerce and located outside of a state having a price maintenance law without being liable for illegal restraint of interstate commerce or unfair competition.

Anti-Discrimination Bill.—Senator VanNuys, of Indiana, has introduced S. 3835, which imposes a fine of not more than $5000.00 or imprisonment of not more than one year or both, for any person engaged in commerce to knowingly discriminate against competitors of a purchaser by granting any discount, rebate or allowance over and above any discount, rebate or allowance available to competitors, or to sell goods in any part of the United States at prices lower than those exacted by said person elsewhere in the United States for the purpose of destroying competition, or eliminating a competitor.

Sales Below Cost.—Again the Federal Trade Commission has been asked to approve a rule having the force and effect of law prohibiting the "selling of goods below cost with the intent and with the effect of injuring a competitor, and where the effect may be to substantially lessen competition or tend to creat a monopoly or to unreasonably restrain trade, cost being determined by including all elements recognizable as good accounting practices."

Toilet Article Tax Repeal.—H. R. 9867, recently introduced by Representative McCormack of Massachusetts, repeals the 10% tax on perfumes, essences, toilet waters, cosmetics, petroleum jellies, hair oils, pomades, hairdressings, hair restoratives, toilet powders and similar preparations, and the 5% tax on tooth and mouth washes, dentifrices, tooth-pastes and toilet soaps.

Ten Cent Toilet Articles Exempted.—H. R. 10134 introduced by Representative Owen of

Georgia, amends the Revenue Act of 1932 by providing that the 10% tax on toilet articles shall not apply to "articles retailing at 10¢ or less, exclusive of any State sales tax."

Payroll Records.—Manufacturers, wholesalers and retailers who do not employ eight or more persons must keep records, beginning January 1, 1936, to show that they are not employers under the Federal Security Act and not subject to the tax imposed under the act.

The Decision of the Court of Appeals in the Matter of the New York State Fair Trade Act.—It is the intention of the Committee on Fair Trade of the New York State Pharmaceutical Association to exert every legal effort to induce manufacturers of nationally advertised pharmaceutical and cosmetic preparations to stabilize resale prices on their products.

The Court of Appeals merely declared unconstitutional that section of the law which bound non-signatories to the terms of the contracts between manufacturers and retailers.

The Court in the opinion of the Committee distinctly upheld the right of a manufacturer to enter into resale price contracts with wholesalers and with retailers. The right of a manufacturer to adopt a refusal-to-sell policy was also upheld.

The Committee on Fair Trade asks all to sign contracts when the same are submitted and approved by the Committee.

The Committee on Legislation of the N. Y. State Pharmaceutical Association will introduce the following legislation.

1. A bill to prohibit manufacturers and wholesalers from selling poisonous, deleterious and habit-forming drugs to non-licensed stores.

2. A bill to empower the State Board of Pharmacy to revoke a pharmacist's license for unethical conduct.

3. A bill to empower the State Board of Pharmacy to control and limit the opening of new pharmacies.

4. A bill to strengthen the Fair Trade Act.

5. A bill to prohibit the sale of any commodity below the manufacturer's list price in dozen quantities or smaller units, plus overhead, which latter shall be defined to include wages, salaries, light, rent, insurance, interest on loans, taxes, licenses, advertising expenses, etc., not to be considered at less than 15% at any time.

6. A bill to give the State Board of Pharmacy control over the manufacture and sale *of all* proprietary medicines.

Chairman Hauck, of the Committee on Membership, reported that he plans to circularize the professional pharmacies in New York City in an endeavor to gain new members for both the parent organization and the Branch. He also reported that he intended to send letters to all members of the graduating classes in the pharmacy colleges of New York City, this year, hoping thereby to gain many new members.

Under new business a telegram was read from the Legislative Committee of the N. Y. State Pharmaceutical Association, requesting that telegrams be sent to Senators Copeland and Wagner, demanding early passage of Bill S. 3154. A second telegram was from the same Committee and requested members to send telegrams or letters to Melvin Eaton of Norwich, N. Y., Republican Leader of the State, protesting against the bills introduced in the Senate which would repeal the Feld-Crawford Law (Fair Trade Act).

A letter was received from President Henry J. Wildhack, of the New York State Pharmaceutical Association, explaining that he intended to appoint an Auxiliary Trade Committee to check up as to whether or not manufacturers and wholesalers are enforcing their resale price contracts. The auxiliary members are to act as contact men between Branch Associations and the Fair Trade Committee. The president was requested to appoint three members from our Branch to this committee.

President Schaefer then called upon Chairman Steiger, of the Committee on the Progress of Pharmacy, for his report which is as follows:

Science News Letter Reports.—Quick relief for *Angina Pectoris* by inhalation of trichlorethylene, homologue of chloroform, was described in paper by Dr. John C. Krantz, Jr., at the meeting of the A. A. A. S. At the same meeting Dr. James C. Munch told of the permanent relief of *Angina* by treatment with an extract of the pancreas from which Insulin has been removed.

According to Dr. Walter R. Miles, of Yale, drugs that are good for weak individuals may have an entirely opposite effect on those in good health.

Doctors Tamura and Boyd, of the University of Cincinnati, report a new way of making vaccines for immunization against diseases for which there are at present no safe vaccines. Instead of killing the specific culture by heat to make the vaccine, these investigators treat it with ketene.

Drs. Stanley and Loring publish further discoveries of their crystalline virus of tobacco mosaic. From tomato plants suffering from mosaic disease they isolated the same crystalline compound as that causing tobacco mosaic. Dr. Stanley's investigations show that the cause of this one virus disease is not a living substance but a non-living chemical. It may be that the agents which cause other virus diseases are also non-living chemical substances. If this proves to be the case, it will provide an entirely new line of attack on a wide group of diseases that afflict animals and man.

From Oil, Paint & Drug Reporter.—On January 31st the Philadelphia College of Pharmacy dedicated the new Remington Memorial Laboratory; the installation and equipment were made possible by gifts of Eli Lilly & Co.

Drug Trade News.—Allergic complaints, such as asthma and hay fever, were traced to a condition diametrically opposite to that of diabetes, according to Dr. H. B. Wilmer of Abington Memorial Hospital. He stated that allergic patients have a high sugar tolerance resulting from an insufficient secretion from the cortex of the suprarenal gland.

President Schaefer then introduced Ralph R. Foran, Chief Chemist, Merck & Co., Inc., the speaker of the evening, who discussed Pharmaceutical Chemicals, their purchase, preservation and use. An abstract of Mr. Foran's speech follows:

"In buying chemicals for use in the pharmacy, the pharmacist should give some thought to the manner of their intended use, their proper form, purity, their keeping qualities, proper packaging and all other considerations which are pertinent, all to the end that he may have the type and quality of goods best suited for the purpose in mind.

"Many solid chemicals are available in a variety of forms and qualities and many liquid chemicals are available in several strengths. He may, by judicious selection, not only save money, but use his chemicals to better advantage in making up prescriptions or preparations or for other purposes. Sodium carbonate, for instance, is available in ten different varieties of grades and forms, each one of distinctive quality and form.

Other examples of chemicals which may be had in different forms and quality specifications are acetylsalicylic acid, boric acid, salicylic acid, sodium salicylate, dibasic sodium phosphate, acetanilid, iron and ammonium citrate, potassium bicarbonate, potassium chlorate, zinc sulphate, magnesium sulphate, sodium and potassium hydroxide, potassium iodide, zinc oxide and so forth. Among the liquid chemicals hydriodic acid, acetic acid and phosphoric acid may be mentioned as being obtainable in several strengths.

"In order that chemicals may be adequately preserved, the precautions given in the U. S. Pharmacopœia, the National Formulary and other books should be followed. Factors which influence the deterioration of chemicals are heat, cold, moisture, light, air (oxidation) or combination of these. Sometimes, in spite of all precautions, chemicals will spoil and we can only attribute this to 'the perversity of inanimate objects.'

"While the chemical characteristics of most chemicals are well known and recorded in the literature, there are variables as to many of the physical properties and the pharmacist would do well to acquaint himself with these possible variations, all to the end that he may best serve himself and his customers."

Following general discussion the speaker was accorded a rising vote of thanks.

HORACE T. F. GIVENS, *Secretary.*

PHILADELPHIA.

The February meeting of the Philadelphia Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held in the Club Room of Mitten Hall, Temple University, February 18, 1936. President MacLaughlin called the meeting to order. The minutes of the January meeting were read and approved. Dr. Robert P. Fischelis, past-president of the parent body, was introduced as a guest.

Dr. James C. Munch presented the names of three applicants for membership in the Branch; they were duly elected. The new members are: George W. MacFarland, Bernard Melkon and Charles Kohler.

Under new business President MacLaughlin appointed the following Committee on Nominations to report during the March meeting: *Chairman*, James C. Munch; Adley B. Nichols and Frank H. Eby.

The meeting was then turned over to Dr. James C. Munch, who officiated as chairman of a Symposium on Research and Scientific Papers presented by members of Temple University. The speakers and their subjects were:

Professor Frank H. Eby, on, "Stramonium;" Dr. Thomas M. Logan, "Preservation of Canned Foods;" Prof. Harry M. Mantz, "Investigations on Cannabis;" Walter C. Dietrich, "Results of Saliva Tests on Animals;" Dr. James C. Munch, "Taste Tests."

Thanks were expressed to William Salus, of Williams, Brown and Earle, for securing and operating the motion picture machine.

GEORGE E. BYERS, *Secretary.*

MARCH.

The March meeting of the Philadelphia Branch, AMERICAN PHARMACEUTICAL ASSOCIATION, was held at the Philadelphia College of Pharmacy and Science, Tuesday evening, March 10th, and called to order by President MacLaughlin. Reading of the minutes of the February meeting was waived. The treasurer's report was submitted with a certificate of audit, as rendered by Prof. Frank H. Eby. The report, as of March 2, 1936, showed a balance of $167.77 in the checking account and $49.22 in the special savings account. A motion to accept the report was made and passed.

The following applications for membership in the Philadelphia Branch was made by Chairman James C. Munch, of the membership committee; J. Bruce Fegan; Mrs. John Sabatino; John Sabatino. The applicants were voted upon and duly admitted to the Local Branch.

The official speaker of the evening, Prof. William J. Stoneback, was then presented. He chose as his subject "Firearms." He discussed and illustrated the various type pistols—their efficiency, safety and how to keep them in good working order. He pointed out, that under the Witkins act, all type pistols had to be registered, and in Pennsylvania, a permit had to be obtained to purchase and carry one. The Local Branch members were pleased with the fine dissertation and proceeded to show their interest by frequently questioning the speaker, who very capably answered same.

Mr. Hunsberger, entertained a motion, which was duly seconded, that the members give the speaker a rising vote of thanks for his presentation.

President MacLaughlin expressed his appreciation for the honor accorded him and the cooperation given him by the Branch members during his term of office.

The nominating committee was called upon for its report. The committee consisted of Chairman J. C. Munch, A. B. Nichols and F. H. Eby. The chairman read the report as follows: *President*, Lawrence L. Miller; *First Vice-President*, H. Evert Kendig; *Second Vice-President*, S. H. Kerlin; *Secretary-Treasurer*, George E. Byers; *Delegate to the House of Delegates*, A. PH. A., Ambrose Hunsberger.

The report was accepted and as there were no further nominations the President asked Chairman Munch to cast a unanimous ballot for the nominees; thereupon they were declared elected officers for the ensuing year. The newly elected officers were installed.

Preceding the meeting, the members assembled in the reception room of the college for the annual past-presidents dinner. Nineteen members and guests were present.

GEORGE E. BYERS, *Secretary.*

NOT NECESSARILY SPINACH.

Please note that "green vegetables" need not mean spinach. Spinach is by no means in a class by itself as a vegetable rich in vitamin A value. In tests thus far available escarole, kale and parsley have shown higher vitamin A values than spinach; other dark green leaf vegetables, such as beet greens, chard, dandelion and turnip tops rank about with spinach in this respect. (It is time for the science of nutrition to throw off the incubus of too close an identification with spinach.)—SHERMAN, H. C., *Food and Health*, New York, Macmillan Company, 1934.

THINGS TO BE CONSIDERED IN PROMOTING THE USE OF OFFICIAL PRODUCTS.*

BY MARVIN J. ANDREWS.[1]

For the past several years there has been a great amount of enthusiasm in promoting the use of the drugs and preparations contained in the United States Pharmacopœia and the National Formulary. The actual methods used by the various city, county, state or national pharmaceutical associations vary a great deal; some have been successful while others have proven a total failure. With all of these methods, the real theoretical object back of this publicity is to induce the practicing physician, dentist or veterinarian to write more prescriptions, which, in turn will give the pharmacists an opportunity to actually practice their chosen profession.

The various methods used in publicising the products of the United States Pharmacopœia and the National Formulary may be classified roughly into two general classes, namely, (1) Publicity based on price alone and (2) Publicity based on a well-outlined educational plan. There are many different methods that may be followed under each of the two general classes and the object of this paper is to point out a few of the many things to be considered in adopting either of the two above-mentioned plans.

It is necessary for the Committee in charge of this work to thoroughly discuss the various plans of promoting the use of the official products, then to adopt a definite program to follow and continue this program over a sufficient length of time to be worth the effort required. With this portion of the program definitely settled the next step is to determine the best method of financing the proposed plan. This alone is a task unless the ASSOCIATION or the individual has sufficient funds in bank to spend for this definite purpose.

METHODS OF FINANCING PROGRAM.

The method of raising funds to carry on the promotion of the use of official products may be conducted as follows: (1) Have the association or associations promoting the work appropriate a definite sum of money to be spent during the year. (2) In case the funds are low in the ASSOCIATION Treasury the next best method is to make an appeal to the retail pharmacists in the city or state in which the publicity is to be carried on. The method of appeal will vary in different localities. The program outlined below is the method used in Maryland during the year 1934–1935.

The U. S. P. and N. F. Publicity Committee outlined the method to be followed in collecting the necessary funds and published this outline in the space regularly allotted to this Committee in the *Maryland Pharmacist*, which goes to every drug store throughout the State each month. When this was in the hands of the pharmacists, the invoices of each of the large wholesale druggists throughout Maryland were stamped for a period of ten days as follows: "Have you contributed to the U. S. P. and N. F. Publicity Fund? If not, please mail $1.00 to Charles S. Austin, Jr., 3036 Abell Ave., Baltimore. Follow work in *Maryland Pharmacist*." After using the rubber stamp on the invoices for four days a letter explaining the work of the Committee and the results obtained to date was mailed to all that had not contributed as of that date. At the end of ten days, those that had not contributed were visited by a member of the U. S. P. and N. F. Maintenance Committee. The results of this campaign were quite satisfactory. The Associations have decided to add one dollar to the annual dues of the members to finance the work for the coming year.

PUBLICITY BASED ON PRICE ALONE.

When the publicity material is based on price alone it is necessary to make a comparison with some unofficial products. This is usually accomplished by making a list of the unofficial products corresponding to the official product giving the net cost price of each. It is true that this is quite a contrast, yet in so doing the Committee is subjecting themselves to severe criticism since the same ratio is not carried out in the selling price. If possible it would be better to make a comparison of the selling price rather than the net cost. However, this is practically impossible as the selling price of the article will vary with the individual pharmacist.

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* Section on Education and Legislation, AMERICAN PHARMACEUTICAL ASSOCIATION, Portland meeting, 1935.

[1] Assistant Professor of Pharmacy, School of Pharmacy, University of Maryland.

A better method to use when the publicity is to be based on price alone is to take some drug or preparation as a unit. Then calculate the price of the other items in terms of the unit without mentioning the price in any instance. The following will serve as an example:

Name of Article.	Price in Small Units.	Bulk Prices.
Article A	1.5	1.0 (unit)
Article B	5.0	4.0
Article C	1.2	0.8

Using the above illustration, you have not disclosed to the other professions the actual cost or selling price of any of the articles mentioned, which surely is the better method of the two.

The objections to a plan, basing the publicity on price alone are many. The three outstanding objections are: (1) The Committee is trying to sell the products on price alone. (2) It is necessary to condemn the products of reputable manufacturers in carrying out this type of program. This in turn results in a "mud-slinging" campaign at the end of which the profession of pharmacy has taken several more steps toward the cellar. (3) There is a tendency in people to believe that the value obtained is in proportion to the price they have paid.

In the estimation of the author this type of program can have but a very limited success as there is only a small number of items that can be compared, while a publicity plan based on a well-outlined educational program has unlimited possibilities.

PUBLICITY BASED ON A WELL-OUTLINED EDUCATIONAL PLAN.

A Committee that bases its program on a well-outlined educational plan does not have to worry about the quality of the drugs and preparations contained in the United States Pharmacopœia and the National Formulary, as these two books are recognized by the Federal Pure Food and Drugs Act and by the laws of the various States as the legal standards for drugs and preparations in this country. With this recognition as a start the Committee has many talking points on why a practicing physician, dentist or veterinarian should prescribe these products wherever possible.

The average young practitioner of to-day is not taught in the medical schools how to write an intelligent prescription. Neither do they learn much about prescribing while serving their internships in the various hospitals. As a result, when they open their own offices they know very little, or nothing, about the art of prescribing and usually use some prescriptions they have obtained from their physician-friends or from some salesman. Knowing this there are any number of ways in which the pharmacist can suggest the use of the official products and show how the simple drugs can be compounded into intelligent prescriptions. In doing this it is necessary to bear in mind certain fundamental principles such as solubility, incompatibilities, the nature of the drug to be prescribed, etc.

In sending the suggested prescriptions to members of the other professions definite policies should be established before the work is started, such as (1) Whether the prescriptions are to be written in the official Latin, abbreviated Latin or in English. Of the three above-mentioned the author, personally, prefers the use of abbreviated Latin, as the full Latin endings are difficult to remember and English is too easily read by the patient. (2) Whether the quantities of the ingredients are to be given in the Apothecary or Metric system. When the Committee is sending out this information to a large number of physicians the method of giving the quantities in the Apothecary system in one column and those in the Metric system in a corresponding column to the right is to be preferred.

The suggested prescriptions that are to be included on the index cards, pamphlets or booklets should all be compounded and allowed to stand for a period of time equivalent to the time it would require the patient to consume the contents of the prescription. If this procedure is followed the Committee will soon find that all prescriptions calling for only U. S. P. and N. F. preparations are not always a credit to pharmacy, and many changes in formulas will necessarily be made.

Each bulletin sent to members of other professions should be practicable and at the same time present a definite message. This message may be presented in various ways, as (1) by grouping prescriptions of a definite type under one heading such as (*a*) "General Tonics, Stomachics,

'Bitterents,' Hematinics;" (*b*) "Skin Preparations—Lotions;" (*c*) "Skin Preparations—Ointments" and etc., or (2) by showing the various ways in which the same simple drug may be prescribed.

By using a simple drug such as Sodium Salicylate U. S. P. it is possible to prepare a bulletin that will convey a great number of ideas to the practitioner and do much to place the profession of pharmacy on a higher plain. The message may be presented by dividing the bulletin into two parts as follows: (1) Give the Official Definition, Description and Physical Properties; Actions and Uses; Incompatibilities; Suggestions and (2) by giving prescriptions that will illustrate the various ways in which Sodium Salicylate U. S. P. may be prescribed.

The three most frequent forms of prescribing Sodium Salicylate U. S. P. are capsules, powders and liquids. The empty capsules to be used are either colorless, or colored pink, etc. In case the physician wants a colored mixture and still use a colorless capsule he may obtain it by the addition of varying amounts of charcoal or carmine. Suggested prescriptions for powders may be dispensed either in divided papers or in bulk. In case the patient lives in the country and the physician desires to have an effervescing drink without prescribing an effervescing salt, he may add some sodium bicarbonate and direct the patient to take the prescription as follows, "Dissolve one-half teaspoonful in 1/4 glass of water; in another 1/4 glass of water add one-half teaspoonful of vinegar (or lemon juice), mix and drink while effervescing." The color and taste of liquids containing Sodium Salicylate U. S. P. may be varied by changing the vehicles, which should be dark in color.

When possible, the suggested prescription should contain more than one ingredient so the patient will present it to be filled and at the same time prevent self-medication.

METHODS OF PREPARING AND DISTRIBUTING INFORMATION.

At present there are thirteen different states endeavoring to promote the use of official drugs and preparations in various ways. The usual methods of conveying this information are by personal contacts, joint meeting with other professional men or by the distribution of books, pamphlets, bulletins or cards in one way or the other. The purpose in all cases is the same, yet there is no uniformity in the methods of distribution and at the same time there is considerable duplication of the work by the various groups.

It is impossible to have a central Committee to prepare and finance the bulletins for distribution in all the various sections of the United States. However, for uniformity, there should be a central office located preferably in the AMERICAN INSTITUTE OF PHARMACY, to and from which information and bulletins on the official products should be obtained, this central office to be financed by the various State and National Pharmaceutical Associations and the United States Pharmacopœial Convention. The expense of distributing the information should be borne by the State or Local Committees.

The following plan is offered as a suggestion for forming a National Committee. The National Chairman should have his headquarters in the AMERICAN INSTITUTE OF PHARMACY and the National Committee should be composed of seven or eight members. The United States would be divided into districts, similar to the division of the General Membership Committee of the AMERICAN PHARMACEUTICAL ASSOCIATION, and one member selected to represent each District. In turn the members of the National Committee would be the Chairmen for their respective districts. To further subdivide these committees, each District Chairman would have a committee composed of all the chairmen of the State and Local Committees in his district. The actual bulletins should be sent out in the name of the Local or State Committee, who in turn would be responsible for their distribution to the members of the other professions.

At present a great amount of money is wasted by sending the same information pertaining to the products of the United States Pharmacopœia and the National Formulary to all members of the medical and dental professions. A surgeon is not as a rule interested in the products that are intended for the general practitioner, or vice versa. With this in mind the following suggestion is offered as a means of distributing bulletins to the medical profession. A similar program can be arranged for the dental and other professions.

The Local or State Committee should prepare mailing lists composed of physicians specializing in (1) General Medicine, (2) Pediatrics, (3) Surgery, (4) Obstetrics and Gynecology, (5) Dermatology and Syphilology, (6) Eye, Ear, Nose, Throat, etc. The most reasonable meth-

ods of preparing this list would be to use the Directory of the American Medical Association. However, this list would most likely include the retired physicians as well as those engaged in active practice; then again, some physicians would probably desire to be on more than one list. To overcome this difficulty the following more expensive method may be preferred.

On the reverse side of a government postal card addressed to the Chairman of the Local or State Committee should be printed a short message followed by the groups as listed above with a space provided for the physician to check the group in which he desired to be placed. To make as little work as possible for the physician and to insure a prompt reply, it would be well to typewrite his name and address at the bottom of the card so that all he would have to do would be to check the desired group and drop the card in the mail box. This card should be enclosed in a letter explaining its purpose and a general bulletin composed of one or more prescriptions, drugs or preparations that would be of specific interest to each of the above groups, to illustrate what he may expect to receive in the future.

As these suggestions will require a vast amount of work it is suggested that the Chairman of the Local or State Committee be a member of the teaching staff of some School of Pharmacy or a retired professional pharmacist interested in this work. If possible it would be well to assign each unit in each district a definite group, such as, General Medicine or Surgery, and have that unit prepare bulletins to be issued to their respective districts. These bulletins could be sent out under the name of the district or with a little additional expense have the general form set up and print the required number changing the name at the bottom to correspond with the respective Local or State Committee.

In order for any program to be successful it is necessary to distribute the bulletins at regular intervals over a long period of time. To augment the work, booklets composed of all the bulletins prepared during a period of one or more years could be prepared and sold to the physicians at a nominal cost.

In conclusion, the author has tried in this limited time to present his views on the "Things to Be Considered in Promoting the Use of Official Products" realizing they will require a vast amount of work. The expense of this project would be prohibitive if it had to be financed by a National Committee. However, it would amount to a very nominal sum if each drug store in each district contributed to their Local Committee. It is hoped that this paper will arouse sufficient interest to compel discussion which in turn will eventually result in promoting the use of the products of the United States Pharmacopœia and the National Formulary. This in turn will give the pharmacist more of an opportunity to practice his chosen profession.

PLAN FOR SCHOOL STANDARDS.

Acting upon recommendations adopted at the last meeting of the American Council of Pharmaceutical Education with a further view to raising standards of schools of pharmacy and improving curricula, Dr. A. G. DuMez, secretary of the organization, has embodied his conclusions relative to these changes in a draft which is being sent to pharmacists, leaders in the profession and instructors generally, with a request that they present their ideas on the subject. The secretary has submitted his draft, not with any thought of soliciting endorsements, but as a means of bringing out the opinions of those in a position to shape the course of pharmaceutical education. The ideas expressed will be studied by the framers and placed in the final plan as indicative of the prevalent trend of thought.

The outline seeks to provide minimum standards for schools of pharmacy and bear upon all phases of pharmaceutical education, with every college required to keep accurate records concerning each student during his enrollment.

It has not been very long ago since the AMERICAN PHARMACEUTICAL ASSOCIATION *met in Portland—the time before the meeting in Dallas is not as long. Section officers and committees of other divisions should arrange for the programs.*

ASSOCIATION BUSINESS

AD INTERIM BUSINESS OF THE COUNCIL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, 1935–1936.

Office of the Secretary, 2215 Constitution Ave., Washington, D. C.

LETTER NO. 13.

February 19, 1936.

To the Members of the Council:

90. Use of Text of N. F. VI. Motion No. 38 (Council Letter No. 12, page 178) has been carried and Dr. Goodman, the Tennessee School of Pharmacy and Professor Fiero have been so advised.

The following communication has been received from Chairman DuMez of the Committee on Publications:

> "I have looked over the sample pages of the manuscript of the Handbook of Accepted Remedies, Symptoms, and Treatment of Poisoning, Diagnostic Procedures and Miscellaneous Information to be published by the Department of Public Health of San Francisco for use as an official guide by the institutions of that department. In view of the very limited use of the National Formulary test, I am recommending that permission be granted and that no fee be charged. So far as I can determine from the pages submitted, practically the only use which will be made of the text of the N. F. will be to include the titles of certain N. F. preparations."

(*Motion No. 40*) It is moved by DuMez that the Department of Public Health of San Francisco be granted permission to partially reproduce the text of the N. F. VI in the Handbook of Accepted Remedies, Symptoms and Treatment of Poisoning, Diagnostic Procedures and Miscellaneous Information to be published for use as an official guide by the institutions of that department, under the usual conditions and without charge.

91. Election of Members. Motion No. 39 (Council Letter No. 12, page 179) has been carried and applicants for membership numbered 174 to 201, inclusive, are declared elected.

92. Contract for Printing, Binding and Distributing the Year Book, Volume 23. A communication has been received from Chairman DuMez advising that the Committee on Publications has received bids from the firms that have heretofore been invited to submit them. He writes: "I have checked over these estimates carefully—and am recommending that the contract for the manufacture and distribution of the YEAR BOOK of the AMERICAN PHARMACEUTICAL ASSOCIATION be again awarded to the Lord Baltimore Press, Baltimore, Md., on the basis of the quotation submitted on January 10, 1936."

(*Motion No. 41*) It is moved by DuMez that the contract for printing, binding and distributing the YEAR BOOK, Volume 23, be awarded to the Lord Baltimore Press, Baltimore, Md., on the basis of their bid of January 10, 1936.

93. Louisville College of Pharmacy Student Branch. The following application has been received together with the applications for membership and the dues for 1936:

"The undersigned students of the Course in Pharmacy of the Louisville College of Pharmacy desire to establish a Student Branch at the College and petition the Council of the ASSOCIATION to approve the formation of the Branch and its Preamble and By-Laws as submitted herewith.

Joe Black	Fred P. Kranz, Jr.	J. P. Forgy
Claude M. Lloyd	Sister Crescentia	Henry J. Zurlage
Horace E. Hannon	Hal Auiff	James Burgess
John M. Burton	Edward E. Krebs	Sister Anne
Wm. Walsh, Jr.	Jack W. Dorsey	Sister Margaret Ann

Student Advisor, Gordon L. Curry, *Dean*."

The Preamble and By-Laws are as follows:

"In order to stimulate a greater professional and scientific interest in the students at the Louisville College of Pharmacy in the City of Louisville, and vicinities, we the undersigned, do hereby resolve to constitute ourselves into a student branch of the AMERICAN PHARMACEUTICAL ASSOCIATION for the purpose of advancing the objects for which the body was founded. The branch hereby adopts for its guidance the Constitution and By-Laws of the AMERICAN PHARMACEUTICAL ASSOCIATION, and its members hereby subscribe to them.

"ARTICLE I. *Members.* This Branch shall consist of active and associate members.

"ARTICLE II. *Active Members.* All members of the Louisville College of Pharmacy Student Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION shall be members regularly enrolled in Pharmacy in the Louisville College of Pharmacy, on signifying their intention of adhering to the provisions enumerated in the Preamble and in the Constitution of the AMERICAN PHARMACEUTICAL ASSOCIATION, shall be elected to active membership in this branch.

"ARTICLE III. *Associate Members.* Any person who is not an active member, but who manifests his interest either by contribution or active participation of work or research, scientific papers, or adds to its financial resources, shall be termed an associate member but without the right to vote.

"ARTICLE IV. *Officers.* The officers of the Branch shall be a President, Vice-President, Secretary and Treasurer.

ARTICLE V. *Committees.* At the first January meeting of each fiscal year or as soon thereafter as possible, the President shall appoint three standing committees as follows: A Committee on Program, to consist of three members; a Committee on Student Activities, to consist of three members; and a Committee on Membership to consist of three members.

"ARTICLE VI. *Executive Committee.* The officers of the Branch and the chairman of the Standing Committees shall constitute the Executive Committee, to transact all the necessary business usually transacted by such a committee.

"ARTICLE VII. *Meetings.* The meetings of the Branch shall be held at least once a month and as many more times as might seem advisable from the opening date of school each year to the close. Date of the meeting to be selected by the officers of the Branch.

"ARTICLE VIII. *Quorum.* Seven members shall constitute a quorum.

"ARTICLE IX. *Fiscal Year.* The fiscal year of the Branch shall be from the first of January until the first day of January of the following year.

"ARTICLE X. *Elections.* The officers shall be elected by ballot by a majority, at the last meeting held in December and shall be installed at the first meeting held in January, and shall serve for one year or until their successors have been elected. Nominations for officers shall be made at a meeting previous to the meeting at which the election is held.

"ARTICLE XI. *Presiding Officers.* In the absence of the president, the next succeeding officer shall take the chair.

"ARTICLE XII. *Secretary.* The secretary shall keep fair and correct minutes of the proceedings of the meetings and send reports of the same to the JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION as often as is required, and to such journals and newspapers as he may deem proper. He shall preserve on file, all reports and papers of every description presented to the Branch, and shall be charged with the necessary business and scientific correspondence. He shall read all papers handed to him by the President for the purpose, shall call and record ayes and nays, whenever they are required to be called; shall notify the chairman of every standing and special committee of his appointment, giving him a list of his colleagues and stating the business upon which the committee is to act. He shall notify every member at least one week in advance of the time and place of the meeting.

"ARTICLE XIII. *Treasurer.* The Treasurer shall collect and take charge of the funds of the Branch and shall give receipts for the same. He shall pay no money except upon the order of the secretary countersigned by the president and accompanied by the proper vouchers. He shall present a statement of conditions at each December meeting of the Branch. He shall receive the amount of his expenses incident to the duties of his office.

"ARTICLE XIV. *Order of Business.* (1) Reading of the minutes of the previous stated meeting; (2) Introduction of newly elected members; (3) Unfinished or deferred business; (4) New business; (5) Program; (6) Nominations and elections; (7) Adjournment.

"ARTICLE XV. *Miscellaneous.* Every proposition to alter and amend these By-Laws

shall be submitted in writing at a stated meeting of the Branch, and may be balloted for at any subsequent stated meeting, when upon receiving the votes of three-fourths of the members present, it shall become a part of the By-Laws.

"ARTICLE XVI. *Rules of Order.* On all points not specifically mentioned in the By-Laws governing this section, the By-Laws of the AMERICAN PHARMACEUTICAL ASSOCIATION shall take precedence over the other decisions on parliamentary rule."

(*Motion No. 42*) It is moved by Kelly that the application to establish a Student Branch in the Louisville College of Pharmacy and the proposed Preamble and By-Laws of the Branch be approved.

94. Applicants for Membership. The following applications properly endorsed and accompanied by the first year's dues have been received:

No. 202, Charles Kohler, 205 Clividen Ave., Glenside, Penna.; No. 203, Eugene A. Nyiri, 40 Wakeman Ave., Newark, N. J.; No. 204, Charles Nichols, 860 S. 16th St., Newark, N. J.; No. 205, Victor E. Feit, 480 S. Snelling Ave., St. Paul, Minn.; No. 206, Robert Wallis Duncan, 431 Daly Ave., Missoula, Mont.; No. 207, Esther Madden, Box 485 College Sta., Pullman, Wash.; No. 208, George Sonoda, 1325 E. 99th St., Los Angeles, Calif.; No. 209, John R. Emerich, 1286 E. 188th St., Cleveland, Ohio; No. 210, Bernard Melkon, Phila. College of Pharm. and Science, Phila., Pa.; No. 211, Nathan Zonies, 1418 Walnut St., Philadelphia, Pa.; No. 212, F. C. Grein, P. O. Box 1048, El Paso, Texas; No. 213, John Claude Sutton, Wm. Beaumont General Hospital, El Paso, Texas; No. 214, Mandel Brin, 10048 Indianapolis Ave., Chicago, Ill.; No. 215, David Bisen, 111–04, Roosevelt Ave., Corona, N. Y.; No. 216, George Henry Gerlach, c/o Strong, Cobb & Co., Cleveland, Ohio; No. 217, Jack Zitomer, 2055—70th St., Brooklyn, N. Y.; No. 218, Bessie Burda, 2801 S. Springfield Ave., Chicago, Ill.; No. 219, Stanislaw Sokolowski, 35 Evelyn Rd., Everett, Mass.; No. 220, Sister Anne Snow, St. Joseph Infirmary, Louisville, Ky.; No. 221, Sister Margaret Ann Schwering, St. Joseph Infirmary, Louisville, Ky.; No. 222, Claude M. Lloyd, Susie, Ky.; No. 223, Joe Black, College St., Franklin, Ky.; No. 224, Henry John Joseph Zurlage, 615 S. Floyd St., Louisville, Ky.; No. 225, Jack Weldon Dorsey, 42 E. McClain Ave., Scottsburg, Ind.; No. 226, Joe Pearl Forgy, 316 S. 42nd St., Louisville, Ky.; No. 227, Frederick Phillip Kranz, Jr., Six Mile Lane, Buechel, Ky.; No. 228, William Joseph Walsh, 637 S. 41st St., Louisville, Ky.; No. 229, Sister Crescentia Wise, St. Joseph Hospital, Lexinfiton, Ky.; No. 230, Horace Edward Hannon, 3402 Bank St., Louisville, Ky.; No. 231, John Milton Burton, Monticello, Ky.; No. 232, James Rawlins Burgess, Oakdale, Tenn.; No. 233, Harry Franklin Auiff, 411 North College St., Franklin, Ky.; No. 234, Edward Eugene Krebs, 2513 Blvd. Napoleon, Louisville, Ky.

(*Motion No. 43*) Vote on applications for membership in the AMERICAN PHARMACEUTICAL ASSOCIATION.

E. F. KELLY, *Secretary.*

LETTER NO. 14.

March 3, 1936.

To the Members of the Council:

95. Use of Text of the N. F. VI. Motion No. 40 (Council Letter No. 13, preceding) has been carried and the Department of Public Health of San Francisco has been advised.

The following letter has been received from Professor Glenn L. Jenkins: "Dr. A. G. DuMez and the undersigned respectfully request permission to use for comment in the second edition of our textbook on "Quantitative Pharmaceutical Chemistry" the directions given in the National Formulary VI for about six assays. The nature of the use which we expect to make of the National Formulary text is similar to that made in the first edition of our book, sample pages of which are enclosed."

Permission was granted in 1930 to use the text of N. F. V. in the first edition of the book by Drs. Jenkins and DuMez.

(*Motion No. 44*) It is moved by Kelly that Glenn L. Jenkins and A. G. DuMez be granted permission to use the text of N. F. VI for partial reproduction in the second edition of their textbook on "Quantitative Pharmaceutical Chemistry" with the usual acknowledgment and at the usual charge of $5.00.

96. Contract for Printing, Binding and Distributing the Year Book, Volume 23. Motion No. 41 (Council Letter No. 13, preceding) has been carried and the contract is awarded to the Lord Baltimore Press, Baltimore, Md.

97. Louisville College of Pharmacy Student Branch. Motion No. 42 (Council Letter No. 13, preceding) has been carried and the application and the preamble and by-laws are approved.

98. Election of Members. Motion No. 43 (Council Letter No. 13, preceding) has been carried and applicants for membership numbered 202 to 234 are declared elected.

99. Committee on Finance. The Secretary regrets to report that Chairman W. Bruce Philip has been ill for several weeks and that it will be impossible for him to act as Chairman of this Committee for some time, although he is greatly improved. Mr. Philip requests that some one be authorized to act in his place until further notice, especially in the approval of bills.

Chairman Hilton, upon request, has agreed to act for Mr. Philip and the selection is approved by Treasurer Holton.

(*Motion No. 45*) It is moved by Kelly that S. L. Hilton be authorized to act as temporary Chairman of the Committee on Finance in the absence of Chairman Philip. As it is necessary to make provision promptly, a vote is called for at this time but will be considered as tentative if there is objection or if members of the Council desire to submit comments.

100. Applicants for Membership. The following applications properly endorsed and accompanied by the first year's dues have been received:

No. 235, Alice Marie Riordan, 2654 LaSalle Ave., Los Angeles, Calif.; No. 236, James B. Haley, 839½ W. 42nd Bl., Los Angeles, Calif.; No. 237, George A. Ware, 3215 W. 23nd St., Los Angeles, Calif.; No. 238, F. R. Rogers, Main & Market Sts., Dayton, Tenn.; No. 239, Dorothy M. Morrison, Corbin Hall, Missoula, Mont.; No. 240, Grace E. Huber, 42 E. 31st St., Bayonne, N. J.; No. 241, Wobert F. Johnson, 143 N. Water St., Decatur, Ill.; No. 242, William A. Lavin, 225 N. W. 23d Ave., Portland, Ore.; No. 243, Samuel Louis Fox, 1200 Park Ave., Baltimore, Md.; No. 244, Andres Sandin Cestero, De Siego St. No. 72, Rio Piedras, P. R.; No. 245, Melvin F. Waltz, 808 Hamilton Ave., Fort Wayne, Ind.; No. 246, W. J. King, 1220 Seventh Ave., East, Twin Falls, Idaho; No. 247, George Benner Kelly, 45 E. Broadway, Tucson, Ariz.; No. 248, Theodore C. Fields, 1127 W. Saginaw St., Lansing, Mich.

(*Motion No. 46*) Vote on applications for membership in the AMERICAN PHARMACEUTICAL ASSOCIATION.

E. F. KELLY, *Secretary.*

LETTER NO. 15.

March 5, 1936.

To the Members of the Council:

101. Local Secretary, Time and Headquarters for the 1936 Meeting. Mr. Walter D. Adams recently advised that a meeting had been held in Dallas to organize a Committee on Arrangements for the AMERICAN PHARMACEUTICAL ASSOCIATION meeting and that it had not been possible to start the work until the general plans for the Texas Centennial had been completed.

Mr. Adams was nominated as *Local Secretary* with Mr. Sam P. Harben as *General Chairman*. Mr. Adams and Mr. Harben worked together for several years in arranging for the meetings of the Texas Pharmaceutical Association, are thoroughly acquainted with the requirements and have given a great deal of their time recently to determining the best time for the meeting and to selecting the headquarters hotel.

The American Association of Colleges of Pharmacy requested by resolution that the meeting be held on either the third or the fourth week in August. Mr. Adams writes that it will be necessary to select the fourth week as the South-West Market Season is arranged for the third week, which with the attendance at the Centennial, will make that week undesirable.

After an investigation of the hotel facilities, Mr. Adams and Mr. Harben recommend that the Hotel Adolphus, the largest in Dallas and located at Commerce and Akard Sts., near the center of the business section of the city, be selected as the headquarters. The hotel has 825 rooms, all with bath, and a number of large hotels are located nearby. The Dallas Chamber of Commerce has pledged that accommodations will be available for all who may attend. It will be necessary, however, for reservations to be made promptly and this request will be given wide publicity as soon as the headquarters is approved.

The room rates as quoted are: $2.50 and up, single; $3.50 and up, double; and $4.00 and up, twin beds. Luncheons are 85¢ and up, and dinners are $1.25 and up. A la carte service is also available.

Mr. Adams and Mr. Harben have examined the meeting room facilities and are assured that the accommodations are adequate and suitable for the purposes.

(*Motion No. 47*) It is moved by Kelly that Walter D. Adams be elected *Local Secretary* for the 1936 meeting; that the week of August 24th to 29th be selected as the time for the meeting, and that the Hotel Adolphus be approved as the headquarters.

A vote on this motion will be called for in about one week as it is necessary to reach a decision as promptly as possible.

E. F. KELLY, *Secretary.*

NOTICE TO CONTRIBUTORS TO THE JOURNAL AMERICAN PHARMACEUTICAL ASSOCIATION.

The following notice has been prepared from comments received from members of the Board of Review of Papers and of the Publication Committee.

Manuscripts should be sent to Editor E. G. Eberle, 2215 Constitution Ave., N. W., Washington, D. C.

All manuscripts should be typewritten in double spacing on one side of paper $8^1/_2$ x 11 inches, and should be mailed in a flat package—not rolled. The original (*not* carbon) copy should be sent. The original drawings, not photographs of drawings, should accompany the manuscript. Authors should indicate on the manuscript the approximate position of text figures. All drawings should be marked with the author's name and address.

A condensed title running page headline, not to exceed thirty-five letters, should be given on a separate sheet and placed at the beginning of each article.

The method of stating the laboratory in which the work is done should be uniform and placed as a footnote at end of first page, giving Department, School or College. The date when received for publication should be given.

Numerals are used for figures for all definite weights, measurements, percentages, and degrees of temperature (for example: 2 Kg., 1 inch, 20.5 cc., 300° C.). Spell out all indefinite and approximate periods of time and other numerals which are used in a general manner (for example: one hundred years ago, about two and one-half hours, seven times).

Standard abbreviations should be used whenever weights and measures are given in the metric system, *e. g.*, 10 Kg., 2.25 cc., etc. The forms to be used are: cc., Kg., mg., mm., L. and M.

Figures should be numbered from 1 up, beginning with the text-figures (line engravings are always treated as text-figures and should be designed as such) and continuing through the plates. The reduction desired should be clearly indicated on the margin of the drawing. All drawings should be made with India ink, preferably on white tracing paper or cloth. If coördinate paper is used, a blue-lined paper must be chosen. Usually it is desirable to ink in the large squares so that the curves can be more easily read. Lettering should be plain and large enough to reproduce well when the drawing is reduced to the width of a printed page (usually about 4 inches). Photographs intended for half-tone reproduction should be securely mounted with colorless paste.

"Figure" should be spelled out at the beginning of a sentence; elsewhere it is abbreviated to "Fig.;" per cent—2 words.

The expense for a limited number of figures and plates will be borne by the JOURNAL; expense for cuts in excess of this number must be defrayed by the author.

References to the literature cited should be grouped at the end of the manuscript under the *References.* The citations should be numbered consecutively in the order of their appearance (their location in the text should be indicated by full-sized figures included in parentheses). The sequence followed in the citations should be: Author's name (with initials), name of publication, volume number, page number and the date in parentheses. Abbreviations for journals should conform to the style of *Chemical Abstracts,* published by the American Chemical Society.

(1) Author, A. Y., *Am. J. Physiol.*, 79, 289 (1927).

Papers presented at the Sections of the AMERICAN PHARMACEUTICAL ASSOCIATION's annual meeting become the property of the Association and may at the discretion of the Editor be published in the JOURNAL. Papers presented at these Sections may be published in other periodicals only after the release of the papers by the Board of Review of Papers of the JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

The Editor will appreciate comments from Board of Review and Committee on Publication, members, authors and others interested.

EDITORIAL NOTES

THE FLOODS.

The flood visitation, affecting many states, reached the proportion of a national disaster, but the loss and suffering is apt to be forgotten, after the newspapers no longer carry headlines, except by those who endured loss.

Speaking from former experiences and the present, manufacturers and wholesalers responded quickly and helpfully. This statement is general, so that no injustice may be done, for manufacturers have responded in the generous way which has marked former occasions. Service, time and products were supplied at once for the greatly needed biologicals and other materia medica and offer to replace damaged products has been made. The wholesalers have also responded to the immediate needs of their patrons. All of this should be worded into a story deserving of the action prompted without thought of fee or reward. During times of stress, affliction and loss the close relation of the divisions of pharmacy comes into evidence and speaks for the existing fellowship. Appreciation is extended to those who gave comfort, relief and help in the hour of need.

In the stricken sections many pharmacists have suffered direct and indirect loss and they should be given more than passing encouragement. Pharmacists are always well represented among those who respond to needs.

THE U. S. P. VITAMIN COMMITTEE.

The U. S. P. Vitamin Committee held sessions on March 24th in Washington; Chairman E. Fullerton Cook presided. Various phases of the work were presented in papers and discussions and the sessions were well attended.

MEETING FOR DISCUSSION OF U. S. P. AND N. F.

A meeting devoted to addresses and exhibits dealing with U. S. Pharmacopœia XI and National Formulary VI will be held at the AMERICAN INSTITUTE OF PHARMACY, April 9th; a program is being arranged. The Medical School of George Washington University and members of the Medical and Dental Faculties have been invited; also the Medical and Dental Societies of the District of Columbia.

THE PAN-AMERICAN CONFERENCE.

It is hoped to have the medical section of the Pan-American Conference visit the AMERICAN INSTITUTE OF PHARMACY on April 9th.

THE FEDERATION OF AMERICAN SOCIETIES FOR EXPERIMENTAL BIOLOGY.

The federation of American Societies for Experimental Biology formed by—the American Physiological Society, the American Society of Biological Chemists, Inc., the American Society for Pharmacology and Experimental Therapeutics, Inc., the American Society for Experimental Pathology—met in Washington, March 25th–28th, under the auspices of the School of Medicine, George Washington University with the coöperation of the National Institute of Health and other Government and University Institutions.

A large number of papers were read and discussed.

PURDUE DRUGGISTS' CONFERENCE.

The Sixth Annual Druggists' Business Conference held under the sponsorship of the Purdue University School of Pharmacy convened March 25th–27th. Included in this three-day conference were joint meetings of the business and professional groups with the Boards of Pharmacy and groups of the American Association of Colleges of Pharmacy.

Dr. Howard W. Haggard and Dr. Morris Fishbein, editor of the *Journal of the American Medical Association*, were on the program.

Subjects which were considered and discussed included "Reëntering the Drug Business," "What Shall We Do about It?" "Marihuans," "Service *vs.* Mutuals," "New Competition," "A New Lesson in Prescription Pricing," "What Figures Reveal," "News from the Front," "The Pharmacist and the Dentist," "The Pharmacist and the Doctor," "The New U. S. P." and "The New N. F."

E. W. Runyon, member of the A. PH. A. since 1875, and his niece were recent visitors at the AMERICAN INSTITUTE OF PHARMACY.

TOUR OF GERMAN APOTHECARIES.

No more definite information has been obtained relative to the tour of the German apothecaries in this country than submitted heretofore. The Hamburg-American Line—North German Lloyd, has the matter in charge. New York, Buffalo, Detroit, Chicago, Philadelphia and Washington will be visited. The party arrives in Washington Sunday, April 26th.

PERSONAL AND NEWS ITEMS.

VISITORS AT THE AMERICAN INSTITUTE OF PHARMACY.

During the Mass Meeting of Retailers in Washington many visitors registered at the AMERICAN INSTITUTE OF PHARMACY. It is regretted that some did not register and their names are not included in the following list. The arrangement of names is in accordance with registration and not in alphabetical order: Stanley Paul Porter, Gilbert Stein, Kenneth E. Bectuloff and Sidney J. Brown, Pittsburgh; Leopold L. Smith, Harry L. Wertley, Philadelphia; Henry V. Dettoven, West Chester; L. Paul Tweed, Downingtown; E. P. Swunk, A. J. Meier, John C. Walton, E. C. Cameron, J. W. Noble, Charles T. Norris, Alexander Young, Theodore Campbell, Jr., Jason A. Herr, Harry Swain, Harry C. Zeisig, Charles T. Pickett, Philadelphia; Stanley J. Pater, Jr., McKeesport; E. L. Morgan, York; Charles B. Mosemann, York; Stewart G. Leidich, Harrisburg; E. K. Romberger, Elizabethville; Wm. B. Goodyear, Harrisburg; B. Thomas Senseman, Jr., Harrisburg; E. L. Steven, Elizabethville; Emmette Packer, Harrisburg; R. G. Heusel, Harrisburg; Nathan Zonies, Marion M. Rothman, Mark W. Rothman, Philadelphia.

The following from Baltimore: A. R. Raycraft, Jr., Manuel B. Wagner, R. H. Wagner, Milton Miller, William R. Platt, Nathan Levin, Samuel H. Cohen, Bertram Kamber, A. N. Hewing, Ada C. Hewing, Bernard Laken, Irvin Myers, Arnold Travner, Harry Jacobs, Alexander Ogurick, Earl M. Morris; John H. Dowker, Washington.

Andrew A. Kriggier, Milwaukee; John F. Huber, Racine; Jennings Murphy, Milwaukee.

E. F. Rimmer, Charlotte, N. C.; Alfred E. A. Hudson, Goldsboro.

Mr. and Mrs. S. H. Lubinsky, Paterson, N. J.; John T. Hendershot, Newton, N. J.; Albert W. Bach, Hackettstown, N. J.

The following from Tennessee: Tom C. Sharp, Nashville; H. K. Garmany, Chattanooga; H. B. Moseley, Knoxville; Joe Graham, Knoxville; A. S. Henderson, Knoxville; R. R. Ferrell, Memphis; L. S. Elgin, Knoxville; Samuel C. Davis, Nashville.

The following from Georgia: Charles H. Evans, Warrenton; R. Lee Olive, Augusta; W. W. Forte, Columbia; Z. O. Moore, Atlanta.

C. A. Waldron, Minneapolis; W. C. Kregel, St. Paul; J. B. Dargavel, Minneapolis; Ben M. Cohen, Minneapolis.

Edmund R. Abell, Albert Wohlers, Otto J. Pelikan, Chicago; Geo. A. Morava, Cicero; Charles J. Hauranek, Berwyn; Howard H. Zorn, Springfield, Ill.; L. W. Grisold, Woperville, Ill.

John F. O'Brien, Rochester, N. Y.

Wm. D. Strachan, Pawtucket, R. I.; James J. Gill, Providence, R. I.; Charles F. Gilson, Centredale.

Mr. and Mrs. C. N. McKelvey, Bellaire, Ohio.

The following from Colorado: C. O. Shawin, Fort Collins; David B. Frey, Colorado Springs; Charles J. Clayton, Denver, P. T. Stodghill, Denver; Sebastian Kletzky, Pueblo; O. P. Clark, Chillicothe, Mo.

We would be pleased to add the names of others who visited the Building.

The AMERICAN INSTITUTE OF PHARMACY recently had as a visitor, Captain Johnson-Saint, Conservator, Wellcome Historical Medical Museum, London, England. He was well pleased with the Building and its furnishings.

Professor Henry M. Burlage, University of North Carolina, has been elected national president of Rho Chi, honorary pharmaceutical society, according to results of the nation-wide mail ballot, recently announced. He will be installed at the annual convention to be held in Dallas, Texas.

The president-elect is a native of Indiana, holds the A.B. degree from the University of Indiana (1919), the M.A. from Harvard (1921), the Ph.G. and B.S. in pharmacy from Purdue (1924) and the Ph.D. in pharmacy from the University of Washington (1927). He was an instructor in pharmacy at the University of Washington from 1924 to 1926, and chemist of the Oregon Board of Pharmacy and associate professor of drug analysis at Oregon State College from 1927 to 1929. He became a member of the faculty of the University of North Carolina in 1931.

Dr. Edward C. Rosenow, head of the Division of Experimental Bacteriology, Mayo Foundation, will give the McGuire lectures at the Medical College of Virginia on the nights of April 6th and April 7th. His subjects will by *Focal Infection and Elective Localization* and *Streptococci in Relation to Diseases of the Nervous System.* During the day of April 7th a symposium on focal infections will be con-

ducted by the college faculty. This will cover a wide range of topics.

Dr. Simon Flexner, who has been director of the laboratories of the Rockefeller Institute for Medical Research since its opening in 1903, has recently resigned his position, at the age of 72 years.

Dr. Flexner was a lieutenant colonel in the Medical Corps of the U. S. Army during the World War, and later became a colonel and assistant surgeon general in the U. S. Public Health Service. He has done important work in bacteriology and pathology, especially on epidemic encephalitis, and was the first to use meningococcus antitoxin.

Major General Meritte W. Ireland, U. S. Army, retired, has again been named head of the governmental unit of the Washington Community Chest. General Ireland is a former Surgeon General of the Army.

Mrs. L. L. Walton, widow of former President A. PH. A., donated a series of the *American Journal of Pharmacy;* bound and unbound volumes of the JOURNAL A. PH. A., 16 volumes of Pennsylvania Association Proceedings; a first edition of Remington's Pharmacy; a second edition of Parrish's Pharmacy.

As a memorial to the late Prof. James H. Breasted, who died on December 2nd, the building housing the Oriental Institute at the University of Chicago has been named "James Henry Breasted Hall." The institute, erected at a cost of $1,500,000.00, was dedicated on December 5, 1931. Mention is made, in part, because Professor Breasted was, in his earlier years, a pharmacist—a graduate in pharmacy of Chicago College of Pharmacy.

Tentative plans have been announced by Attorney Samuel Shkolnik for a testimonial dinner for **Professor Clyde M. Snow** of the University of Illinois College of Pharmacy, who will be retired from active teaching in June after thirty-six years of service, because of the age limit. This dinner is being arranged for some time in the early part of April.

Dr. R. L. Swain, of Baltimore, Md., has accepted the invitation of the North Carolina Association to address the Greensboro convention.

Dr. Emile Coué,[1] the French pharmacist, is to be honored in his home city, Nancy, by a column on the base of which will be inscribed his famous formula, "Day by day, in every way, I am getting better and better." He visited in the United States in 1923.

[1] Deceased 1926.

Charles J. Lynn, Vice-President and General Manager of Eli Lilly & Co., Indianapolis, was injured slightly in an automobile accident February 29th. Mrs. Lynn who was riding with her husband, was thrown against the windshield by the collision and was severely cut about the face.

The Pharmaceutical Journal of New Zealand, of January 1, 1936, states that there is only one European pharmacy in Addis Ababa, which has become famous throughout the entire northeastern part of Africa. It was established about twenty years ago by a German pharmacist, Walter Zahn. Mr. Zahn, who was a good friend of King Menelik, found his early clientele confined entirely to the missionaries, and it was several years before he won the confidence of the natives, who preferred dealing with their own medicine men. At the present time, however, his is the pharmaceutical authority, not only in Ethiopia, but also in the adjoining colonies, whose hospitals he supplies with drugs. Now natives come from far and near to ask his advice.

BROOKLYN COLLEGE OF PHARMACY.

Brooklyn College of Pharmacy received its Charter on April 21, 1886; Dean W. C. Anderson was a member of the first graduating class and received dipolma No. 1. He has been a member of the faculty for forty-five years and dean since 1902. The College is affiliated with Long Island University and the present building was first occupied in February 1930.

BOARDS AND COLLEGES OF DISTRICT NO. 2.

Representatives of the Boards and Colleges of Pharmacy of New York, New Jersey, Pennsylvania, Delaware, Maryland, District of Columbia met in annual conference in Atlantic City, March 9th–10th. President R. C. Wilson of the American Association of Colleges of Pharmacy attended and addressed the convention on "Moral Standards for Applicants for Licensure."

Interesting reports were presented on board examinations. The 1937 meeting will be held in New York. The Atlantic Country Club entertained the group at a dinner, R. P. Fischelis acting as toastmaster.

TYDINGS BILL INTRODUCED IN THE HOUSE.

Representative Martin Dies of Texas has introduced H. R. 11167. It has been referred to the Committee on the Judiciary.

OBITUARY.

GEORGE D. ROSENGARTEN.

Dr. George David Rosengarten, member of the AMERICAN PHARMACEUTICAL ASSOCIATION, since 1902, died at his home in Malvern, Pa., February 24th, after an illness of about two years. Dr. Rosengarten was born in Philadelphia, February 12, 1869, the son of Harry B. and Clara J. (Knorr) Rosengarten. In 1884, he entered for a special course at Philadelphia College of Pharmacy; in 1890, he earned his B.S. degree at the University of Pennsylvania and received the Ph.D. degree at the University of Jena in 1892; the University of Pennsylvania honored him with the Sc.D. degree.

He engaged with Rosengarten & Sons and, in 1901, was elected Vice-President and succeeded to the same office when the firm became Powers, Weightman-Rosengarten Co., until 1927, and a director of the successors, Merck & Co. He retired from active service as chemical manufacturer, in 1927.

For twenty years, Dr. Rosengarten served as member of the Revision Committee of the United States Pharmacopœia. He was president of the American Chemical Society in 1927, and the Institute of Chemical Engineers. He was fellow of the American Association for the Advancement of Science, of the American Institute, American Philosophical Society, the Rittenhouse Club of Philadelphia and the Cosmos Club of Washington.

In 1895, Dr. Rosengarten married Susan E. Wright of Philadelphia, who survives him; also two sisters, Mrs. W. W. Atterbury and Mrs. Lewis Neilson, and three brothers, Adolph G., Frederic and Joseph C. Rosengarten.

ALBERT HARRISON BRUNDAGE.

Albert Harrison Brundage, recognized authority on toxicology and public health matters, died of pneumonia March 12th, in Central Islip, Long Island, aged 74 years.

Dr. Brundage was born at Candor, N. Y., the son of Amos Brundage, M.D., and Sarah M. B. In 1885, he received the degree of M.D. from New York University Medical College; Ph.G. from Brooklyn College of Pharmacy, in 1892, Pharm.D. in 1897; A.M. from University of Nashville, in 1898; M.S., in 1905, from Rhode Island College of Pharmacy and Allied Sciences. Since 1908, he was professor emeritus of toxicology and physiology, departments of medicine, dentistry and pharmacy, Marquette University. Professor of toxicology and physiology, Brooklyn College of Pharmacy 1898–1903; president of the latter 1893–1894. Toxicologist to Bushwick Hospital, 1904–1921; lecturer on tuberculosis for Brooklyn Committee for the Prevention of Tuberculosis, and for American Red Cross from 1918. President of New York Board of Pharmacy, 1903 and Board examiner in toxicology and posology; chairman state committee on poisons. Founder of first open-air classes in Brooklyn public schools, etc.

Author "A Manual of Toxicology," "Practical Points in Physiology" and frequent contributor to medical and pharmaceutical publications.

WILLIAM A. DYCHE.

William A. Dyche, who retired in 1934, after a service of 31 years as business manager of Northwestern University, died February 19th, aged 74 years. He sold his pharmacy, about 1894, to a chain store organization, who also desired to "buy" his name but this he would not sell. Until he retired, Mr. Dyche was one of the leading pharmacists of Chicago and of the University and his activities were centered on the development of the latter.

ISAAC V. S. HILLIER.

Isaac V. S. Hillier, for fifty years active in the botanical trade, died March 8th in his home in Cranford, N. J., aged 73 years.

Mr. Hillier was born in Jersey City. He received his education in the public schools in Jersey City, following which he entered the employ of his father in July 1878. He was admitted to partnership in 1882; was made secretary-treasurer in 1887, and became president, R. Hillier's Son Corporation, in 1924.

DR. CHARLES JEAN HENRI NICOLLE.

Dr. Charles Jean Henri Nicolle, director of the Pasteur Institute of Tunis, Tunisia, since 1903, died February 28th, aged 69. Dr. Nicolle was born in Rouen, France, studied medicine at the University of Paris and worked under the late Emile Roux at the Pasteur Institute. He was made a professor at the Rouen Medical College in 1893 and in 1896 founded the bacteriology laboratory there. In 1928 he received the Nobel prize in medicine for his research on typhus, notably the discovery

that the disease is transmitted by lice in clothes. It was as a result of his discovery that delousing was made a part of army operations during the World War. He was noted for other important research.

IVAN PETROVITCH PAVLOV.

Prof. Ivan Petrovitch Pavlov, famed physiologist, died in Moscow, February 27th, aged 87 years. He was educated at the University of St. Petersburg and Military Medical Academy. In 1890 he was appointed director of the department of physiology at the Institute of Experimental Medicine in St. Petersburg and in 1897 professor at the Military Medical Academy. Under the Soviet rule Pavlov received special favors from the government, many of which he refused to accept, insisting that he would live in the same manner as other scientists. When he was 85 the government gave him a pension of 20,000 rubles a year, and a fund of a million rubles was made available for extensions of his laboratory in Leningrad. Pavlov's best known work was that on conditioned reflexes; he was many times honored for his achievements. In 1904 he received the Nobel prize in medicine for his research on the salivary glands. In 1935 he served as president of the fifteenth International Physiological Congress at its meeting in Moscow.

Pavlov visited the United States twice, first in 1923, and in 1929 as the guest of the thirteenth International Physiological Congress, which met in Boston.

SOCIETIES AND COLLEGES.

BALTIMORE RETAIL DRUGGISTS' ASSOCIATION.

The Baltimore Retail Druggists' Association held the annual dinner at Lord Baltimore Hotel; R. E. Lee Williamson presided as toastmaster. Among the speakers were U. S. Senator Millard E. Tydings and Mayor Howard W. Jackson. A feature of the banquet was the presentation of the Lawrence S. Williams Pharmacy Week Prize to Morgan and Millard.

PUBLIC HEALTH LECTURES IN CINCINNATI.

The Academy of Medicine of Cincinnati and the University of Cincinnati College of Medicine are sponsoring a series of public health addresses for the public Sunday afternoons.

LECTURERS ON PUBLIC HEALTH.

George Washington University School of Medicine has announced the addition to the faculty of the newly established course in public health teaching of Drs. George W. McCoy, Rolla E. Dyer, Edward Francis, Charles Armstrong and Robert Olesen, all of the U. S. Public Health Service, with the title of professorial lecturer in preventive medicine.

DEVELOPMENT OF HOSPITALS.

The development of hospitals as educational institutions is introducing new problems into hospital administration and control. Occasionally public hospitals are exploited as institutions for postgraduate study without any attempt to demand adequate fundamental training or certification of prerequisite knowledge of those who take the postgraduate study. Hospital administrators must determine whether or not their main educational function is education of the undergraduate, education of the intern or postgraduate training. Moreover, the rights of the patient are paramount to any educational function.—*Journal A. M. A.* for March 7th.

THE VIRGINIA PHARMACY SYMPOSIUM.

Plans are now about complete for the Pharmacy Symposium requested at the last meeting of the Virginia Pharmaceutical Association. The dates will be May 20th and 21st. Dr. Crockett will give lectures on "Certain Recent Advances in the Standardization of Medicinal Products;" Dr. Negus on "What the Pharmacist Should Know about Vitamins" and "The Essentials of p_H That Pharmacists Should Know." Dr. Haag's subject will be "Dangers Incident to the Use of Certain Popular Drugs," and Dr. Miller will lecture on "Biological Products."

The speakers and subjects have been selected with care, and the material will be presented in a practical fashion that will be useful to practicing pharmacists everywhere. There will be no charge for the course and all pharmacists in the State, whether or not they are

alumni of the college, are cordially urged to take in any one or all of the lectures as they may desire.—W. F. R.

PHILADELPHIA COLLEGE CELEBRATES 115TH ANNIVERSARY.

The 115th anniversary of the founding of the Philadelphia College of Pharmacy and Science was celebrated there February 24th, Founders' Day. A large number of alumni, students and other friends were present. The celebration began in the afternoon with an academic procession, followed by an address by Dr. John L. Haney, principal of the Philadelphia Central High School. His topic was, "The Alumnus and His College."

THE AMERICAN CHEMICAL SOCIETY.

The American Chemical Society will hold its ninety-first general meeting in Kansas City, April 13th to 17th. Among the outstanding addresses will be: "Present and Future of Organic Chemistry in America," by Dr. F. C. Whitmore, of Pennsylvania State College; "Physical Chemistry in Retrospect and Prospect," by Dr. Hugh S. Taylor, of Princeton.

SOUTH DAKOTA ASSOCIATION.

The Golden Anniversary meeting of the South Dakota Pharmaceutical Association will be held in Sioux Falls, May 5th–7th. An imposing list of national figures has been placed on the program. This list includes among others the following names: Hon. Wright Patman, M.C., from Texas; secretary John W. Dargavel, of the National Association of Retail Druggists; P. H. Costello, President of the AMERICAN PHARMACEUTICAL ASSOCIATION; and Secretary E. F. Kelly; R. L. Swain, Secretary of the Maryland Board of Pharmacy; Rowland Jones, Jr., Washington representative of the N. A. R. D.; E. R. Serles, Dean of the College of Pharmacy, South Dakota State College; the Governor and other state officials.

OFFICERS OF NEBRASKA ASSOCIATION.

Nebraska elected the following officers: *President*, H. L. Bellamy, Cambridge; *First Vice-President*, J. W. Buswell, Fairbury; *Second Vice-President*, T. H. Harkness, Lexington; *Third Vice-President*, H. G. Lee, Omaha; *Fourth Vice-President*, Mrs. Mae Dutton, McCook; *Fifth Vice-President*, J. D. Barnes, Fullerton; *Secretary*, J. G. McBride, Lincoln; *Treasurer*, Orel Jones, Oconto.

DRUG CHEMICAL DINNER RESERVATIONS OVER 1200.

Reservations for the eleventh annual dinner of the drug, chemical and allied trades, held March 19th, in the Waldorf-Astoria Hotel, New York, exceeded 1200. Presidents and other officers of practically all of the national associations within the drug, chemical and allied trade industries were present.

OFFICERS OF NATIONAL DRUG TRADE CONFERENCE.

The following officers were elected at the annual meeting of the National Drug Trade Conference: *President*, Carson P. Frailey, *Vice-President*, A. C. Taylor, *Secretary-Treasurer*, Rowland Jones, Jr. The following were named by the respective organizations to serve on the Executive Committee with the Officers: R. P. Fischelis, A. G. DuMez, Frederick J. Cullen, Harry Noonan, R. E. L. Williamson and E. S. Newcomb.

PLANT SCIENCE SEMINAR.

Lloyd Harris has invited the Seminar to Oklahoma. He has selected a camp 9 miles north of Wilburton and 40 miles east of McAlester. The camp has nine stone buildings and is completely equipped. Meals will be served and the rates are reasonable. The camp is 220 miles from Dallas. The opportunities for botanizing and for the informal meetings and round-table discussions of the seminar are ideal. The "set up" couldn't be more perfect.

In the next issue of the JOURNAL it is hoped to give dates, highway routings and more details about the camp.

IDAHO PHARMACEUTICAL ASSOCIATION.

At a meeting of the board of directors of the Idaho Pharmaceutical Association, held at Pocatello on February 8th, it was decided to hold the 1936 convention at Idaho Falls, the dates being June 15th–16th. Hotel Bonneville will be the headquarters hotel.

Among those present at the meeting were A. E. Sutton, Caldwell; A. A. Walker, Boise, and Don S. Whitehead, Boise; R. W. Smith, Mountain Home; E. W. Sinclair, Jerome; C. C. Kingsbury, Twin Falls; C. R. Isenburg, Ru-

pert; J. P. Halliwell, Pocatello; J. Earl Evans, Idaho Falls, and Secretary Elmer B. Williams, of Boise. Dean E. O. Leonard, of the Idaho Institute pharmacy department, discussed his school and its problems and policies; D. S. Whitehead spoke on national legislation and led an open forum discussion on that subject, and A. A. Walker spoke on "Drugs in Drug Stores Only" and stressed the need of a Fair Trade act in Idaho and other helpful legislation.

A. D. F. INSURANCE COMPANY.

The American Druggists' Fire Insurance Company is making preparations to celebrate its 30th anniversary during the first week of of June. The report at the annual meeting showed 480 fire losses from which the policy holders recovered $165,876.66. The Company had in force on January 1st, 22,127 policies. A dividend of $3.00 per share was declared. The directors and officers were reëlected.

LEGAL AND LEGISLATIVE.

HEARINGS ON TYDINGS BILL.

The mass meeting held in Washington by independent dealers in various activities was a great success. The convention on March 4th filled Constitution Hall and among the speakers were Senators Tydings and Robinson, and a number of Congressmen; former Governor of Minnesota, J. A. O. Preuss, and Rowland Jones acted as secretary. Those who carried on the work of the convention feel that the event was an outstanding success and are much encouraged. Representatives came from all sections of the country and the attendance is shown to some extent by the visitors at the AMERICAN INSTITUTE OF PHARMACY.

NARCOTIC CONTROL REVISION.

The facts underlying the controversy on the Doughton Bill have been reported in the Press in the following: "In the Treasury, following a suggestion made by Secretary Henry Morgenthau, Jr., in August 1934, there was drafted a bill reorganizing the Secret Service to include under it all the law enforcement units now functioning separately under the Treasury. These were to include: The enforcement division of the alcohol tax unit, the intelligence division of the Bureau of Internal Revenue, the customs agency and the Bureau of Narcotics.

"The State department's objection was that the Bureau of Narcotics had been set up under an international treaty provided in the narcotics limitation convention of 1931. This bureau headed by Commissioner H. J. Anslinger, had served not only to discharge the United States' international obligation, but also as a model foı similar bureaus in the 49 governments participating in the treaty, which had patterned their own organizations directly after the tremendously successful American set-up, State Department attachés asserted."

"Under the narcotics bureau licensing of the medical and pharmaceutical trade in habit-forming drugs, by which the supply of all such drugs is controlled from production to distribution with minutest care, violations have been found in less than one-half of 1 per cent of the total drug output. These violations have been mostly technical, such as wrong registrations, etc."

The drug-trade activities were well represented at the hearing before the House Ways and Means Committee on February 28th and opposition was quite general to a change as proposed in the Bill.

The following was submitted after the hearing:

"The Secretary of the Treasury is authorized to issue such rules, regulations and orders and take such other steps as he shall consider necessary in order to coördinate the functions of investigation, detection and violations of laws hereby transferred to, conferred or imposed upon the Chief of the Secret Service Division with the functions of investigation, detection and violations of narcotic laws lawfully conferred or imposed upon the Commissioner of Narcotics or the Bureau of Narcotics." "Unless this amendment is accepted all branches of the drug trade and the physicians of the country will be subject to the espionage and supervision of two thousand or more undercover agents or inspectors under the direction of the Secret Service instead of two hundred and fifty inspectors especially trained in narcotic law enforcement and conversant with pharmacists', physicians' and drug manufacturers' and wholesalers' problems'."

COURT UPHOLDS CALIFORNIA UNFAIR PRACTICE ACT.

"The act is a wholesome statute," Judge Moore said in his opinion, "It does not deprive

anyone of a natural right. It bids all men in trade and in industry to live and let live. It does not attempt to fix prices. It merely requires each man affected not to cut his brother's throat at night or secretly to apply the lethal. By its inhibitions, it declares those obligations which are ingrained in the social fabric and fixes rights that originate in the principle of mutual aid and that arise from other impulses which impel men to conserve their kind.

"The act is altogether valid. It was adopted in the proper exercise of the legislative functions. It is not a violation of the inhibition contained in either the 5th or the 14th Amendment to the Federal Constitution. Neither did the state surrender its powers to enact such a measure by any other clause of that arch instrument.

"The act is not a restraint upon the right of contract. It is only an injuction against acts which are declared thereby to be criminal. The claim that freedom of contract is impaired by the act is archaic. The claim made by the defendant that the items listed as constituting the cost of doing business are difficult of ascertainment does not affect the validity of the statute. The legislation can prescribe a rule, but it cannot find the facts."—*Drug Topics*, March 9, 1936.

THE BRANDEIS CLASSIC ON PRICE CUTTING.*

Mr. Justice Brandeis exposed the myth that excessive prices result from the establishment of minimum resale prices, in the following language:

"The position of the independent producer who establishes the price at which his own trade-marked article shall be sold to the consumer must not be confused with that of a combination or trust which, controlling the market, fixes the price of a staple article. The independent producer is engaged in a business open to competition. He establishes the price at his peril—the peril that, if he sets it too high, either the consumer will not buy, or, if the article is nevertheless popular, the high profits will invite even more competition. The consumer who pays the price established by an independent producer in a competitive line does so voluntarily; he pays the price asked, because he deems the article worth that price as compared with the cost of other competing articles. But when a trust fixes, through its monopoly power, the price of a staple article in common use, the consumer does not pay the price voluntarily. He pays under compulsion. There being no competitor he must pay the price fixed by the trust, or be deprived of the use of the article. x x x

"America should be under no illusions as to the value or effect of price-cutting. It has been a most potent weapon of monopoly—a means of killing the small rival to which the great trusts have resorted most frequently. It is so simple, so effective. Farseeing organized capital secures by this means the coöperation of the short-sighted unorganized consumer to his own undoing. Thoughtless or weak, he yields to the temptation of trifling immediate gain, and, selling his birthright for a mess of pottage, becomes himself an instrument of monopoly."

* From *Maryland Pharmacist*, February 1936. Copies of complete article may be obtained from the *Maryland Pharmacist*.

TYDINGS BILL ARGUED AT SENATE HEARING.

Separate hearings were held March 13th, before a sub-committee of the Senate Judiciary Committee on the Tydings-Dies N. A. R. D. National Fair Trade Enabling Act. Senator Hatch of New Mexico is Chairman of the Committee and was assisted by Senators McGill, Kansas; Van Nuys, Indiana; Borah, Idaho; and Austin of Vermont.

Senator Millard Tydings of Maryland summarized by pointing out that the bill would not permit agreements among manufacturers or among distributors; has no monopolistic features and no provisions for fixing definite prices; is purely voluntary and permissive; and would permit ordinary manufacturers to do what powerful ones are now doing through the device of agency in maintaining resale prices. He insisted that ample competition will remain.

ALCOHOL LABELING AND PERMIT RULES EXTENDED.

Both house and senate have passed a resolution (S. J. Res. 217) extending the dates for permit and labeling requirements under the federal alcohol control act.

This act prohibited selling alcoholic beverages at wholesale after March 1, 1936, except under permit from the Federal Alcohol Administration, but this date has now been advanced to July 1, 1936. The act also provided that after the same date all labels on alcoholic beverages must be approved by the F. A. A., and this date has now been extended to August 15, 1936, in the case of distilled

spirits and December 15, 1936, in the case of wine and malt beverages. The F. A. A. has been unable to complete the preliminary work necessary for issuing permits and approving labels, but expects to have the work completed before the extended time expires.

The senate finance committee has not yet acted on H. R. 9185, an omnibus alcoholic beverage control act, including the Murphy amendment which would require the use of alcohol distilled from cereal grains in all products coming under the beverage alcohol or food and drug acts.—*Oil, Paint and Drug Reporter.*

APPROPRIATIONS BY CONGRESS.

Appropriations are being considered by Congress: For the Bureau of Narcotics $1,275,000.00 is proposed. For the United States Public Health Service, the following appropriations, among others, are proposed; $8,000,000.00 to assist states, counties, health districts and other political subdivisions of the states in establishing and maintaining adequate public health services, including the training of personnel for state and local health work; $1,155,160.00 for investigations of diseases and sanitation; $64,000.00 for maintaining the National Institute of Health; $5,870,000.00, for the pay of personnel and maintenance of hospitals; $663,220.00 for the Division of Mental Hygiene, including the maintenance and operation of the Narcotic Farm, Lexington, Ky. The bill proposes that on and after July 1, 1936, the Narcotic Farm at Lexington, Ky., shall be known as the United States Public Health Service Hospital, Lexington, Ky.

DISTRICT OF COLUMBIA.

S. 3514 has passed the Senate, proposing to regulate the manufacture, dispensing, sale and possession of narcotic drugs in the District of Columbia.

COSMETIC TAX ON BATH SALT.

Following a request from drug wholesalers in San Francisco in connection with the attempt of the Treasury Department to collect the cosmetic tax on Epsom Salt labeled as "bath salt," the National Wholesale Druggists' Association has brought the matter before the Treasury Department.

KENTUCKY LEGISLATION.

H. 487 purposes to enact a new pharmacy practice act. Among other things, the bill proposes to prohibit the sale, except on the prescription of a licensed physician, dentist or veterinarian, of hormones (synthetic or otherwise), barbital, sulphonethylmethane (tetronal), sulphonmethane (sulphonal), diethylsulphon, diethylmethane (tetronal), carbromal, paraldehyde, chloral or chloral hydrate, chlorbutanol, all serums and antitoxins, and the following emmenagogues or abortives: Tansy, pennyroyal, rue, savin, ergot and cotton root.

CALIFORNIA FAIR TRADE ACT.

On February 28th the highest court in the State declared the California Fair Trade (Badham) Act, including Section $1^1/_2$, constitutional. It was the case of Max Factor *vs.* Kunsman, based on Section $1^1/_2$ which reads as follows:

"Section $1^1/_2$. Wilfully and knowingly advertising, offering for sale or selling any commodity at less than the price stipulated in any contract entered into pursuant to the provision of Section 1 of this act, whether the person so advertising, offering for sale or selling is or is not a party to such contract, is unfair competition and is actionable at the suit of any person damaged thereby."

Under leadership of Frank E. Mortenson, the druggists of California expect to celebrate this very important decision.

GENERAL PHARMACY REGULATIONS IN GERMANY.

(1) The pharmacy is an institution of the State Health Service. Its task consists in service for the public welfare. Striving after profit must take second place to the achievement of this purpose.

(2) The pharmacist must conscientiously carry out his professional responsibilities. He must observe the legal regulations. He must maintain the honor and reputation of his profession in and out of business hours.

(3) The pharmacist must always be loyal toward fellow-members of his profession. Especially must the leader of each business unit treat subordinates as professional comrades.

(4) Members of the staff must place the whole of their energy at the disposal of the pharmacy for which they work, and to guard its rights and reputation in and out of business hours. They are not to disclose any transactions of the business except in so far as they are, as members of the German Pharmaceutical Institute, required to notify offenses to higher officials.

BOOK NOTICES AND REVIEWS.

The Structure and Composition of Foods. By ANDREW L. WINTON, Ph.D., and KATE BARBER WINTON, Ph.D. Volume II, "Vegetables, Legumes, Fruits," 904 pages, 303 illustrations by the authors. John Wiley & Sons, Inc., New York, 1935. $15.00.

As was to be expected, volume II of this important work on the chemistry and microscopy of foods is a worthy companion of the first volume which appeared in 1932. In point of organization, scope, scholarly treatment, effectiveness of illustration and pleasing typography the work is comparable to volume I. There is little need to repeat what has been said before about these characteristics.

In the past many of the outstanding botanical treatises correlating structure and composition have been devoted to medicinal plants. But whether a given article of diet is classed as food or medicine is often merely a matter of circumstance or of arbitrary definition. Consequently, the pharmacist and pharmacognosist will find in the volume under review much that is interesting and admirable. The teacher will frequently use the book for reference and for information. The technologist will find it invaluable for microscopical control. And, with a little ingenuity, the retail druggist should be able to turn the volume to practical account.

As in volume I, the broader chemical relationships are reviewed in the introduction. Special mention is made of proteins, which are such important constituents of the legumes. Organic acids and pectinous materials are discussed because of their occurrence in fruits. Plant pigments are given an extended treatment commensurate with their general distribution in vegetables and with recent chemical discoveries concerning them. It is interesting to note that the chemistry of the vitamins is reviewed from the standpoint of structural organic chemistry rather than from the standpoint of physiology.

For detailed treatment this volume is divided into 2 parts. Part 1 is devoted to the vegetables. As the author points out, a precise definition of the term vegetable is not possible. Hence certain arbitrary assignments have been made and sub-groups as tomatoes, melons (which are fruits in a strict botanical sense), sweet corn, legumes (seeds) and mushrooms are included. Further groupings are made on the basis of structure, *i. e.*, root vegetables, leaf vegetables, flower vegetables, etc. Part 2 is devoted to fruits proper. In both parts the final classification is by plant family and species. Of special interest to the pharmacist and pharmacognosist are the treatises on the mushrooms; horseradish and burdock (root vegetables); the vegetables of the lily, goosefoot, mustard, parsley and composite families (leaves, bulbs, shoots, flowers) and the many legumes (seed vegetables). Among the fruits there are likewise many species of pharmaceutical interest, such as the date, fig, quince, tamarind, citrus fruits, papaya and pomegranate.

In a brief review it is impossible to describe adequately either the wealth of material or the beauty of the illustrations. The book will be highly appreciated by all who are interested in the structure and composition of plants. It should enjoy a correspondingly wide distribution.—R. E. KREMERS.

Twelve Hours of Hygiene. By F. L. MEREDITH, B.Sc., M.D., professor at Tufts College, lecturer on Hygiene at Simmons College. The book contains about 400 pages including 110 illustrations. P. Blakiston & Son Co., publishers. The volume is an abridged edition of Hygiene; a textbook for college students and is intended for use in one-hour, one-semester courses in Hygiene for college freshmen.

The material has been divided as far as possible into twelve chapters: The Body and Its Functions, Medical Science and the Service of Health, Up-keep and Energy Supply, Digestion and Elimination, The Use of Energy in Activities, By-products of Activity and Energy Renewal, Body Mechanism.

At the end of the volume are several appendices placed there in order not to break the continuity of the text and the purpose is to use this as an integral part of the text.

"A JOLLY DRUG STORE."

On his first visit to Panama, at a dance, after finishing his "duty dances," the Prince of Wales, now King Edward, chose as his partner a pretty girl. This aroused the ire of a matron of position in the Canal Zone set, who made it a point to see that the Prince learned the girl was "an assistant in a drug store." Informed of this, the prince replied:

"What a jolly drug store it must be."